Climate Scientists' Perceptions of Climate Change Science

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The Perspectives of Climate Scientists on Global Climate Change

Dennis Bray and Hans von Storch

124 pages with 11 tables and 100 figures

Abstract

This report presents the findings of two surveys of climate scientists' perceptions of the global warming issue. The first survey was conducted in 1996 and the second survey in 2003. A brief text section demonstrates some of the significant findings. The surveys investigate the means by which scientific conclusions are reached and the climate scientists interpretations of what these conclusions might mean. The complete responses to the surveys are presented in Appendix A: Tables and Appendix B: Figures. Each table and figure is presented in a manner to indicate statistically significant change in scientists perspectives over the period of the two surveys.

Die Perspektiven von Klimaforschern über Globale Klima-Veräderungen

Zusammenfassung

Dieser Reports stellt die Ergebnisse zweier Studien vor, in welchen Klimawissenschaftler zu ihrer Sichtweise zum Thema globale Klimaerwärmung befragt worden. Die Befragungen hierzu wurden in den Jahren 1996 und 2003 durchgeführt. Die Wissenschaftler wurden sowohl zur Methodik ihrer Ergebnissfindung als auch zur Interpretation dieser um Auskunft gebeten. Die detaillierten Ergebnisse sind in Anhang A (Tabellen) und in Anhang B (Abbildungen) dargestellt. Hierbei werden die Ergebnisse aus den jeweiligen Befragungsjahren gegenübergestellt, um statistisch signifikante Unterschiede zu verdeutlichen. Ein kurzer Textabschnitt zu Beginn dieses Report fasst die wesentlichen Ergebnisse zusammen.

CONTENTS

Introduction

The following is a presentation of descriptive statistics resulting from two surveys of climate scientists. The short text body highlights some of the findings and is followed by Appendix A: Tables and Appendix B: Figures, providing descriptive statistics for all variables contained in the surveys. The first survey of climate scientists' perspectives regarding global warming was conducted in 1996 and hard copies were distributed by post to scientists in 5 countries in their respective languages: Germany, USA, Canada, Denmark and Italy. (more discussion of the 1996 results are available in Bray and Bray and von Storch, and Bray et al, 1997, 1999). To assist in the design of pertinent questions, a series of in-depth interviews was conducted with scientists in major institutions in the USA, Canada and Germany. The resulting questionnaire, consisting of 74 questions, was pre-tested in a German institute and after revisions, distributed in North America and Europe.

The second survey was conducted in late 2003 by electronic means and extended to include questions pertaining to impacts, adaptation and media involvement. Responses were forthcoming from some 30 countries. Distribution was only in the English language.

Most questions were designed on a seven point rating scale. A set of statements was presented to which the respondent was asked to indicate his or her level of agreement or disagreement, for example, 1 = strongly agree, 7 = strongly disagree. The value of 4 can be considered as an expression of ambivalence or impartiality or, depending on the nature of the question posed, for example, in a question posed as a subjective rating such as "How much do you think climate scientists are aware of the information that policy makers incorporate into their decision making process?", a value of 4 is no longer a measure of ambivalence, but rather a metric.

Following the discussion of the sampling and the resultant controversy in 2003, some of the highlights of the findings are detailed before presenting the results in Appendix A and B.

Sampling

Sample 1996

The anonymous, self-administered questionnaire was distributed by post with no follow up letters of reminder. Sampling was less than ideal. First, sample size was limited by resources. The sample for the North American component was drawn from the EarthQuest mailing list. Due to the fact that the mailing list is more extensive than the discipline of climate science, a true random sampling technique was not employed. Rather, subjects were selected according to institutional and disciplinary affiliations, all of which were related to the climate sciences. Nonetheless, the mailing list was adequate to provide the predetermined sample size of 500 North American scientists. This resulted in a final sample of 460 US scientists and 40 Canadian scientists. The sampling of German scientists, due to reasons of confidentiality, was beyond full control. A random sample of German scientists was drawn from the mailing list of the Deutsche Meteorlogische Gesellschaft by its administration, resulting in the distribution of 450 survey questionnaires. A further 50 questionnaires were distributed to members of the Max-Planck-Institut für Meteorologie, Hamburg, and members of the University of Hamburg. Returns of the German sample extended beyond Germany and included 13 respondents reporting to be other than German. However, since they were drawn from the German mailing list they are included here in the German sample. The questionnaire was further distributed in Denmark with an approximate 30% return with the assistance of the Danish Meteorological Society and in Italy, with the assistance of Dr. P. Battinelli of the Osservatorio Astronomico di Roma, with 73 out of 240 potential respondents completing the survey.

The overall response rate of the survey was approximately 40%, a favourable response rate when compared to response rates of similar surveys. Similar surveys include the following: Stewart et al (1992), a SCIENCEnet electronic survey received 118 responses from "a computer-based network ... which has over 4000 subscribers"(p.2); the National Defense University Study (1978) based its conclusions on the responses from 21 experts; the Slade Survey (1989) based conclusions on responses from 21 respondents; the Global Environmental Change Report Survey (1990) had a response rate of approximately 20% from a sample 1500; the Science and Environmental Policy project (Singer 1991) received a 32% response rate from a sample of 102, and later a 58% response rate from another sample of 24; the Greenpeace International Survey received 113 responses from a sample of 400, and; Auer et al (1996) report that "about 250 questionnaire were distributed [by method of personal contact at conferences] and 101 were sent back". Morgan and Keith, (1995) employed the data drawn from a sample size of 16 US climate scientists. This list is by no means exhaustive of such surveys but is included for further reference should the reader be so inclined as to asses other perspectives.

Sample 2003

In 2003 the survey was repeated and the list of questions extended to 106 to include questions pertaining to adaptation and science-media interaction. This was conducted by electronic means and responses were forthcoming from some 30 countries. The existence of the survey was posted in the Bulletin of the American Meteorological Society, the Climlist server, and was sent to institutional lists in Germany and Denmark. As an effort to prevent general access to the survey, the survey was password protected. The password was contained in the informative message distributed according to the above. Consequently response rate cannot be calculated. The total number of respondents was 558. The notable decline of the European respondent number in 2003 might be attributed to the fact that in 1996 the survey was dispersed in the language of the target country but in 2003 the questionnaire was presented in English only.

Controversy

The 2003 survey was not without controversy. Comments concerning response rate, sampling bias were made.

Response rate

Controversy arose concerning some aspects of the 2003 survey. Once such controversy concerned response rates and on-line surveys, i.e. that response rate could not be calculated. However, Dillman (2000: p.400) argues that a survey on the WWW is a useful methodology. Watt (1999) argues that lower cost data collection via the WWW results in larger samples with more statistical powers and more useful results. Bradley (1999) similarly argues that utilizing a technique called 'saturation sampling', which attempts to survey all identifiable targets, overcomes any lack of reliable sampling frame. (It should be noted that the intention was never to conduct a panel study, i.e. the exact same respondents in both surveys.)

Sampling Bias

Critics of the survey suggested that sceptics could submit multiple copies of the survey (see: Lambert, Tim, 2005), thereby biasing the results. (However, no criticism was raised suggesting that the other polemic might also act in a similar manner, that is, a biasing of the results by multiple submissions by climate change alarmists.) It is claimed that the 2003 survey was posted on a sceptics mailing list and concern was raised that the sample for the 2003 survey might not be representative and as such the results invalid. In an effort to determine if indeed the sample was biased the Two-sample Kolmogorov-Smirnov test and the Wald-Wolfowitz Test (general tests that detect differences in both the locations and the shapes of distributions) have been employed.

1. Two-sample Kolmogorov-Smirnov test

This test compares the cumulative distribution functions for two groups to detect differences in shapes and locations. This test is to determine whether two independent samples (1996 and 2004) have been drawn from the same population or populations with the same distribution. The two-tailed test is sensitive to any kind of difference in the distributions from which the two samples were drawn - differences in location, in dispersion, in skewness, etc. This test is based on the maximum absolute difference between the observed cumulative distribution functions for both samples.

A small significance value indicates the two groups differ in either shape or location. In some instances, of course this would be expected as the knowledge of the phenomenon improves.

2. Wald-Wolfowitz Test results

This is a nonparametric test of the null hypothesis that two samples come from the same population, against the alternative hypothesis that the two groups differ in any respect whatsoever. This test can reject the null hypothesis if the two populations differ in any way: central tendency, variability or skewness, etc. This test combines and ranks the observations from both groups. If the two samples are from the same population the two groups should be randomly scattered throughout the rankings.

Summary of results of analyses of all variables:

There are 67 variables common to the 1996 and 2004 surveys. The Two-sample Kolmogorov-Smirnov test suggests there are no discernible differences between samples in 34 of these variables. The Wald-Wolfowitz Test was unable to calculate conclusion regarding group differences in all but one variable, for which results indicated no discernible difference between the two samples.

Discussion

The complete results of all questions are presented in Appendix A and Appendix B. This discussion addresses only some of the highlights apparent in the data.

Demographics

Appendix A presents tables of the demographics of the sample demonstrating the similarity and differences between the two surveys. Table 2, Number of Years Worked in Climate Science seems to aptly demonstrate the transition of years worked of a relatively constant base of climate scientists. Climatologist and meteorologist seem to remain the main classifications of academic training (Table 3) with 'climatology' becoming a much more pronounced category in the latter survey. Table 4 suggests that the main activity of the respondents is listed as modelling, consistent in both surveys, as is the case for 'type' of research in Table 5, where 'applied' remains the predominant response. In summary, in addition to the Two-sample Kolmogorov-Smirnov test and Wald-Wolfowitz Test results, the demographic features of the two samples tend to demonstrate much in common.

Self-Assessment of the State of Climate Science by Climate Scientists

The self assessment of the state of climate science by climate scientists concerns a brief analysis of what could be construed as the research components of the science. The list is not exhaustive but addresses areas of significant research effort and concern. The discussion encompass Figures 1 thru 15 in Appendix B. Within this section the notable statistically significant differences in the means include a slight increase in the understanding of the role of albedo, land surface processes, and sea ice but no statistically significant increase in the understanding of the role of greenhouse gases or turbulence.

Table 1. Assessment of Science Components: How well do you think atmospheric climate models can deal with the following processes? 1 – very inadequate; 7 = very adequate

	1996 mean	2003 mean	Stat Sig t
Hydrodynamics	4.60	4.45	.116
Radiation	4.63	4.71	.353
Vapour	3.62	3.83	.013
Clouds	3.06	3.22	.077
Precipitation	3.16	3.29	.165
Convection	3.57	3.48	.290

Table 2. Assessment of Science Components: How well do you think ocean models can deal with the following processes? 1 – very inadequate; 7 = very adequate

	1996 mean	2003 mean	Stat Sig t
Hydrodynamics	4.60	4.71	.191
Heat Transport	4.42	4.49	.362
Convection	3.71	3.82	.177
Coupling models	3.29	3.62	.000

Table 3. The current state of scientific knowledge is developed well enough to allow for a reasonable assessment of the effects of: 1 = strongly disagree; 7 = strongly agree

	1996 mean	2003 mean	Stat Sig t
Turbulence	3.68	3.68	.941
Albedo	4.58	4.91	.000
Land surface proc.	3.71	4.01	.001
Sea ice	3.86	4.09	.008
Greenhouse gases	4.47	4.84	.093

After having assessed the components of the science, scientists were asked to assess the utility of their efforts in terms of assessing the accuracy of the models and future climate conditions. Respondents perceived no change in the ability of models to accurately verify the climatic conditions for which they are calibrated and in neither year suggested this ability to be very high. When asked generally about the models' skill to predict the future the responses indicate that in general scientists do not have much faith in this ability. When asked about specific time periods, the ability was perceived to deteriorate over time. This is presented in Table 4 and in Figures 16 thru 21 in Appendix B.

Table 4. The ability of models to predict the future: How much do you agree with the following statements: 1 = strongly agree; 7 = strongly disagree

	1994 mean	2003 mean	Stat Sig t
Models accurately verify conditions for which they are calibrated	3.93	3.94	.921
Models can accurately predict conditions of the future	4.69	4.53	.096

As Table 4 indicates, scientists do not perceive any significant change in he ability of the models in the period between 1996 and 2003. Table 5 presents the assessment of the ability of models to address specified time periods.

Table 5. To what degree do you think the current state of scientific knowledge is able to provide reasonable predictions of : 1 = a great degree; 7 = none at all

	1994 mean	2003 mean	Stat Sig t
Inter-annual variability	4.63	4.01	.000
Climate variability on decadal scale	4.89	4.51	.000
Climate variability on 100 year scale	5.24	4.78	.000
Climate variability in >100 year scale	5.47	5.11	.000

While there have been some statistically significant minor improvements over the years the data suggests that the scientific community do not perceive the models to be the truth machine as often portrayed in the media. On the contrary, climate scientists seem all too aware of the limitations of climate models, demonstrating a minimal amount of faith in the output when if comes to making either long term or short term predictions.

Stating Impacts

Having determined the scientists' assessment of the abilities of the science, attention is turned towards the utility of the output. This section briefly looks at the assessment of the perception of climate change impacts as presented in Figures 22 thru 27 in Appendix B. The perception of the ability to be able to determine local impacts has remained unchanged and minimal over the years (Figure 22). Even the ability to explicitly state what these impacts might be remains elusive (Figure 23). A greater degree of certainty seem to persist however, that there will be detrimental impacts somewhere (Figure 24), although the risk is perceived to be greater elsewhere than at home (Figure 25). This seems somewhat at contradiction to the claims that there is a slight tendency to lean towards the argument that climate change might also have some positive effects for some societies, but not for the society in which the scientist lives. In short, both positive and negative impacts of climate change are perceived to be more likely to occur somewhere else other than where the scientist is located, collectively suggesting that climate change will have a 'not-in-my-back-yard' catastrophic impact rating irregardless of where my back yard is located.

The Crux of the Debate

In this section of the discussion attention is turned to the expert opinion of things that raise public and political hackles. First, can we say for certain that global warming – man made or otherwise – is underway (Figure 28)? From 1996 to 2003 there was quite a significant shift saying yes. Given that it is happening how much is it of a leading problem facing humanity? According to the data (Figure 29) climate change is perceived by climate scientists are representing a significant global problem (this however is difficult to reconcile given the discussion concerning impacts). Furthermore, as Table 6, Appendix A indicates, in 2003 only 7.9% of those scientists responding to the question 'I feel the most pressing issue facing humanity today is …' claimed climate change/global warming as the most pressing issue. (One should note however the possible role of competing issues, i.e. terrorism.) So, if global warming is happening, and if it might be a significant global problem, who, according to science, is to blame? Figure 30 suggests there is quite some hesitance about putting all of the blame on humans. However, when considering attribution one should keep in mind the self proclaimed relative lack of understanding of green house gases and when considering the claim of climate change being a leading global issue one should keep in mind the self proclaimed lack of predictive capabilities in the models.

Conclusion

The purpose of this report has been to point out some of the controversy surrounding the survey of climate scientists and to high light some of the findings that have added to the controversy (and some that have not). Figures 31 to 100 (Appendix B) allow for the exploration of some of these issues in greater detail, with figures 69 – 100 pertaining to questions asked only on the 2003 survey. As the data seems to suggest, the matter is far from being settled in the scientific arena. A repeat of the survey is planned for 2007. It is hoped that the cooperation of the broad scientific community will again be forthcoming and that subsequent analysis will shed light not just on controversial claims but also on those areas of science that are consensually in need of further study, i.e. figures 1 – 15 in Appendix B.

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Appendix A

Table 1. The country in which I work is

1996		Frequency	Valid Percent
Valid	USA	149	27.3
	Canada	35	6.4
	Germany	228	41.8
	Italy	73	13.4
	Denmark	33	6.0
	Other	28	5.1
	Total	546	100.0

2003		Frequency	Valid Percent
Valid	USA	372	66.8
	Canada	14	2.5
	Germany	56	10.1
	Italy	14	2.5
	Denmark	5	.9
	Netherlands	4	.7
	Sweden	5	.9
	France	5	.9
	United Kingdom	18	3.2
	Australia	21	3.8
	Norway	3	.5
	Finland	3	.5
	New Zealand	6	1.1
	Austria	3	.5
	Ethiopia	1	.2
	South Africa	3	.5
	Poland	1	.2
	Switzerland	7	1.3
	Mexico	3	.5
	Russia	1	.2
	Argentina	1	.2
	India	3	.5
	Spain	2	.4
	Japan	3	.5
	Brazil	1	.2
	Taiwan	1	.2
	Bulgaria	1	.2
	Total	557	100.0
Missing	Missing value	1	
Total		558	

Table 2. The approximate number of years that I have worked in climate sciences is

1996		Frequency	Valid Percent
Valid	0-5	162	30.4
	6-10	95	17.8
	11-15	72	13.5
	16-20	52	9.8
	>20	152	28.5
	Total	533	100.0
Missing	Missing value	13	
Total		546	

2003		Frequency	Valid Percent
Valid	0-5	78	14.0
	6-10	153	27.5
	11-15	100	18.0
	16-20	66	11.8
	>20	159	28.5
	Total	557	100.0
Missing	Missing value	2	
Total		558	

Table 3. My academic training is mostly in (i.e. mathematics, physics, meteorology, ecology)

1996		Frequency	Valid Percent
Valid	Mathematics	17	3.1
	Physics	66	12.1
	Atmospheric physics	70	12.8
	Meteorology	281	51.6
	Oceanography	32	5.9
	Ecology	18	3.3
	Geophysics	1	.2
	Geography	16	2.9
	Chemistry	10	1.8
	Geology	6	1.1
	Engineering	4	.7
	Other	7	1.3
	Climatology	6	1.1
	Fluid dynamics	1	.2
	Hydrology	3	.6
	Palaeoclimatology	1	.2
	Atmospheric chemistry	1	.2
	Medicine	2	.4
	Agriculture	1	.2
	Physiology	1	.2
	Biometeorology	1	.2
	Total	545	100.0
Missing	Missing value	1	
Total		546	

2003		Frequency	Valid Percent
Valid	Mathematics	42	7.6
	Physics	98	17.7
	Atmospheric physics	34	6.1
	Meteorology	195	35.2
	Oceanography	42	7.6
	Ecology	17	3.1
	Geophysics	4	.7
	Geography	28	5.1
	Chemistry	19	3.4
	Geology	7	1.3
	Engineering	5	.9
	Other	25	4.5
	Climatology	22	4.0
	Hydrology	11	2.0
	Palaeoclimatology	1	.2
	Atmospheric chemistry	1	.2
	Agriculture	2	.4
	100	1	.2
	Total	554	100.0
Missing	Missing value	4	
Total		558	

Table 4. The area in which I conduct most of my research is (i.e. physical processes, modeling, observations, experimentation, impact assessment,...)

1996		Frequency	Valid Percent
Valid	Impact assessment	21	4.1
	Geoscience instrumentation	1	.2
	Oceanography	6	1.2
	Observations	91	17.8
	Biogeo-cyles	3	.6
	Climate science assessment	2	.4
	Modeling	123	24.1
	Measurement	8	1.6
	Nutrient cycles	1	.2
	Administration	8	1.6
	Fluid dynamics	20	3.9
	Monitoring	1	.2
	Boundary layers	1	.2
	Ecology	3	.6
	Ecosystems	1	.2
	Physical processes	51	10.0
	Radiation	2	.4
	Nonlinear dynamics	2	.4
	Computer application	1	.2
	Ocean modeling	1	.2
	Environmental change	3	.6
	Physics	2	.4
	Remote sensing	4	.8
	Global policy	1	.2
	Experimentation	21	4.1
	Atmospheric radiation	1	.2
	Inter-seasonal climate	1	.2
	Biometeorology	3	.6
	Palaeo-climatology.	2	.4
	Fluid mechanics	1	.2
	Science policy	1	.2
	Biochemistry	1	.2
	Physical chemistry	1	.2
	Chemistry	6	1.2
	Atmospheric processes	15	2.9
	Climate theory	3	.6
	Air/sea interact.	3	.6
	Diagnostic	3	.6
	Convection	1	.2
	Turbulence	1	.2
	Engineer	2	.4
	Cloud physics	7	1.4
	Stratosphere dynamics	2	.4
	Solar influences	2	.4
	Snow/ice	1	.2
	Public forecast	3	.6
	Agro-meteorology	2	.4
	Regional climate	6	1.2

	Table 4 continued		
1996			
Valid	Thermodynamics	1	.2
	Aviation meteorology	2	.4
	Economic geography	2	.4
	Stochastic processes	2	.4
	Forecasting	3	.6
	Data systems	3	.6
	Synoptic	3	.6
	Climate change	14	2.7
	Meteorology	5	1.0
	Meso-climate	1	.2
	Dendrochronology	5	1.0
	Downscaling	2	.4
	Human - climate interaction	2	.4
	Biophysiology	2	.4
	Medicine	1	.2
	Climatology	1	.2
	Animal biometeorology	1	.2
	Met impacts on humans	1	.2
	Phonological modelling	2	.4
	Topoclimatology	1	.2
	Other	10	2.0
	Total	510	100.0
Missing	Missing	36	
Total		546	

2003		Frequency	Valid Percent
Valid	Impact assessment	27	4.9
	Oceanography	1	.2
	Observations	149	26.8
	Biogeo-cyles	2	.4
	Climate science assessment	2	.4
	Modeling	191	34.4
	Measurement	1	.2
	Monitoring	1	.2
	Boundary layers	1	.2
	Ecology	2	.4
	Physical processes	60	10.8
	Ocean modeling	1	.2
	Remote sensing	5	.9
	Experimentation	7	1.3
	Atmospheric radiation	1	.2
	Palaeoclimatology	8	1.4
	Science policy	1	.2
	Atmospheric processes	1	.2
	Diagnostic	1	.2
	Cloud physics	3	.5
	Stochastic processes	1	.2
	Forecasting	15	2.7

	Table 4 continued		
2003			
Valid	Data systems	4	.7
	Synoptic	3	.5
	Climate change	3	.5
	Meteorology	1	.2
	Human - climate interaction	1	.2
	Climatology	9	1.6
	Other	53	9.5
	Total	555	100.0
Missing	Missing values	3	
Total		558	

Table 5. I consider my research to be mainly (i.e. applied, theoretical, targeted, ...)

1996		Frequency	Valid Percent
Valid	Applied	360	67.0
	Theoretical	126	23.5
	Qualitative	7	1.3
	Other	26	4.8
	Experimental	2	.4
	Theory and applied	13	2.4
	Administration	2	.4
	Public broadcasting	1	.2
	Total	537	100.0
Missing	Missing value	9	
Total		546	

2003		Frequency	Valid Percent
Valid	Applied	348	63.2
	Theoretical	102	18.5
	Qualitative	1	.2
	Quantitative	1	.2
	Other	44	7.4
	Experimental	2	.4
	Theory and applied	2	.4
	Administration	1	.2
	Targeted	50	9.1
	Total	551	100.0
Missing	Missing value	7	
Total		558	

Table 6. I feel the most pressing issue facing humanity today is
(open ended question recoded into following categories)

	Valid	Missing
1996	468	78
2003	518	39

1996		Frequency	Valid Percent
Valid	Population pressure	234	50.0
	Environmental change	16	3.4
	Sustainable development	14	3.0
	Climate change	**14**	**3.0**
	Resource distribution	13	2.8
	Global warming	**12**	**2.6**
	Ecological problems	12	2.6
	Pollution	11	2.4
	Distribution of wealth	10	2.1
	Peace	8	1.7
	Poverty	8	1.7
	Global inequality	8	1.7
	Global economy	8	1.7
	Water resources	6	1.3
	Societal problems	6	1.3
	Good government	5	1.1
	Resource depletion	5	1.1
	Food-water supply	4	.9
	Politics and business	4	.9
	Ozone	4	.9
	War	4	.9
	Malnutrition/hunger	3	.6
	3rd world	3	.6
	3rd world dev	3	.6
	Religion	3	.6
	Nuclear holocaust	3	.6
	North south conflict	3	.6
	Corruption	3	.6
	Energy consumption	3	.6
	Morality	2	.4
	Economic security	2	.4
	Greed	2	.4
	Terrorism	2	.4
	Nationalism	2	.4
	Nuclear technology	2	.4
	Political instability	2	.4
	Environmental problems	2	.4
	Sin	1	.2
	Health	1	.2
	Sociopathic frailties	1	.2
	What to do now	1	.2
	Lack of discipline	1	.2
	Lack of community	1	.2
	Societal intolerance	1	.2

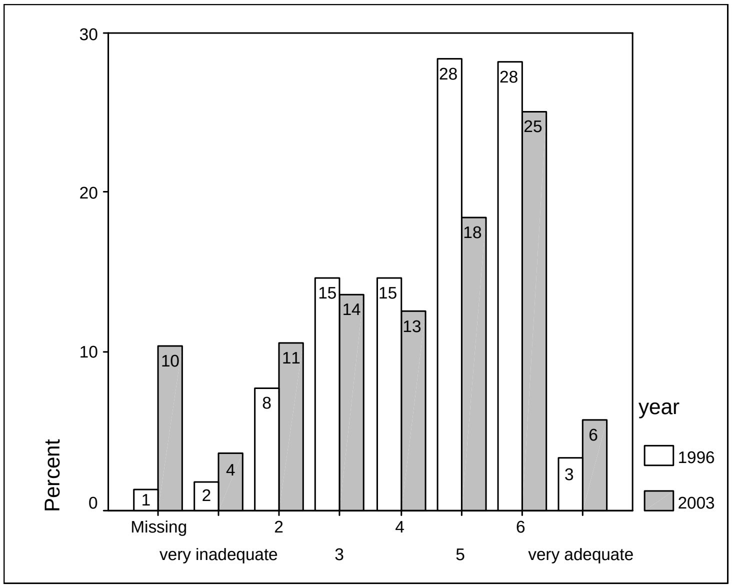
	Table 6 continued		
	Aids	1	.2
	Lack of community	1	.2
	Societal intolerance	1	.2
	Aids	1	.2
	Immorality	1	.2
	Racial tension	1	.2
	Climate prediction	1	.2
	National unemployment	1	.2
	USSR transition	1	.2
	Human health	1	.2
	Quality of life	1	.2
	Food production	1	.2
	Predicting the future	1	.2
	Stress	1	.2
	Behaviour of sun	1	.2
	Total	468	100.0

2003		Frequency	Valid Percent
Valid	Population pressure	114	22.0
	Global inequality	29	5.6
	Terrorism	28	5.4
	Climate change	26	**5.0**
	Poverty	24	4.6
	Sustainable development	21	4.1
	War	21	4.1
	Environmental problems	21	4.1
	Other	19	3.7
	Global warming	15	**2.9**
	Peace	10	1.9
	Food-water supply	10	1.9
	Resource distribution	10	1.9
	Pollution	10	1.9
	Nuclear holocaust	9	1.7
	Resource depletion	9	1.7
	Water resources	8	1.5
	Environmental change	8	1.5
	Good government	8	1.5
	Societal intolerance	8	1.5
	Global change	8	1.5
	Distribution of wealth	7	1.4
	Malnutrition/hunger	6	1.2
	Globalization	6	1.2
	Sin	5	1.0
	3rd world dev	5	1.0
	Violence	5	1.0
	Education	4	.8
	Aids	4	.8
	Ecological problems	4	.8
	Justice	4	.8
	Health	3	.6
	3rd world	3	.6

	Table 6 continued		
	Global economy	3	.6
	Lack of community	3	.6
	Humanity	3	.6
	Economic security	2	.4
	Greed	2	.4
	Corruption	2	.4
	Energy consumption	2	.4
	Quality of life	2	.4
	Communicating climate change	2	.4
	Egoism	2	.4
	Short time horizons	2	.4
	Technology	2	.4
	Lack of compassion	2	.4
	Morality	1	.2
	Consumption	1	.2
	Societal problems	1	.2
	Religion	1	.2
	North south conflict	1	.2
	Nuclear technology	1	.2
	Political instability	1	.2
	Bigotry	1	.2
	Environment vs. economy	1	.2
	Dictatorships	1	.2
	Purpose of life	1	.2
	Understanding planet	1	.2
	Malaria	1	.2
	Human nature	1	.2
	Natural hazards	1	.2
	International politics	1	.2
	Fossil fuels	1	.2
	Total	518	100.0

Appendix B

Figure 1. How well do you think *atmospheric* climate models can deal with hydrodynamics?



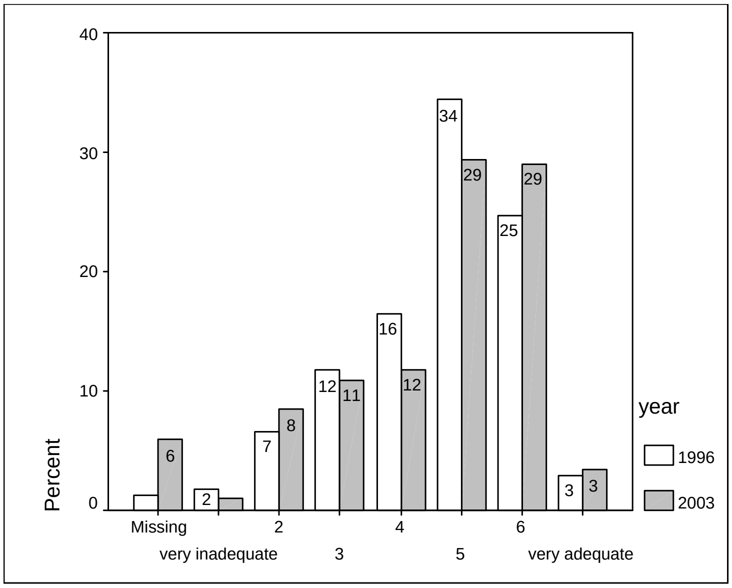
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
How well do you think atmospheric climate models can deal with hydrodynamics	1996	539	4.60	1.415	.061
	2003	500	4.45	1.640	.073

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
How well do you think atmospheric climate models can deal with hydrodynamics	Equal variances assumed	22.023	.000	1.574	1037	.116	.15	.095	-.037	.335
	Equal variances not assumed			1.565	988.893	.118	.15	.095	-.038	.336

Figure 2. How well do you think *atmospheric* climate models can deal with radiation?



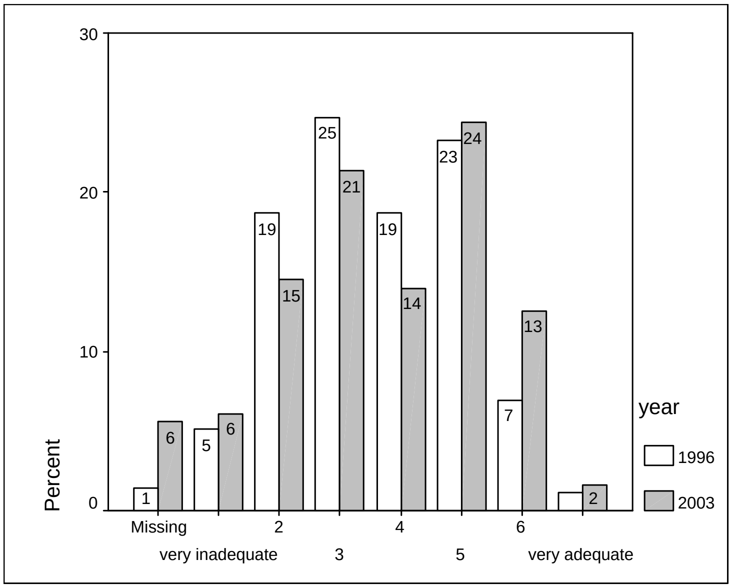
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
How well do you think atmospheric climate models can deal with radiation	1996	539	4.63	1.333	.057
	2003	525	4.71	1.397	.061

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
How well do you think atmospheric climate models can deal with radiation	Equal variances assumed	1.593	.207	-.929	1062	.353	-.08	.084	-.242	.086
	Equal variances not assumed			-.929	1056.327	.353	-.08	.084	-.242	.087

Figure 3. How well do you think *atmospheric* climate models can deal with vapour in the atmosphere?



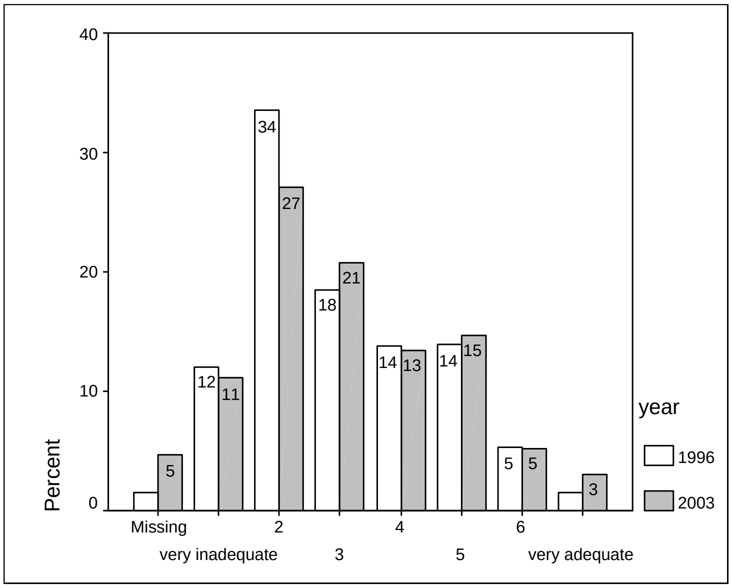
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
How well do you think atmospheric climate models can deal with water vapour in the atmosphere	1996	538	3.62	1.400	.060
	2003	527	3.85	1.532	.067

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
How well do you think atmospheric climate models can deal with water vapour in the atmosphere	Equal variances assumed	6.448	.011	-2.489	1063	.013	-.22	.090	-.400	-.047
	Equal variances not assumed			-2.486	1050.212	.013	-.22	.090	-.400	-.047

Figure 4. How well do you think *atmospheric* climate models can deal with the influence of clouds?



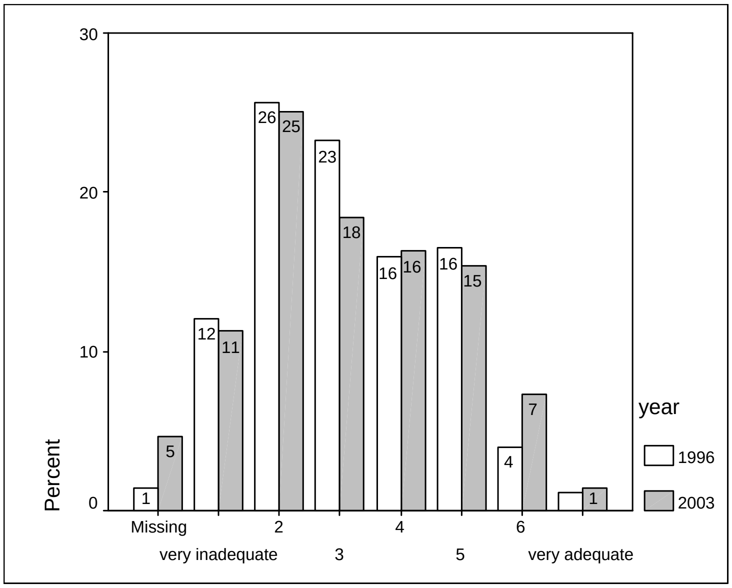
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
How well do you think atmospheric climate models can deal with clouds	1996	538	3.06	1.503	.065
	2003	532	3.22	1.570	.068

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
How well do you think atmospheric climate models can deal with clouds	Equal variances assumed	1.539	.215	-1.768	1068	.077	-.17	.094	-.350	.018
	Equal variances not assumed			-1.767	1064.830	.077	-.17	.094	-.350	.018

Figure 5. How well do you think *atmospheric* climate models can deal with precipitation?



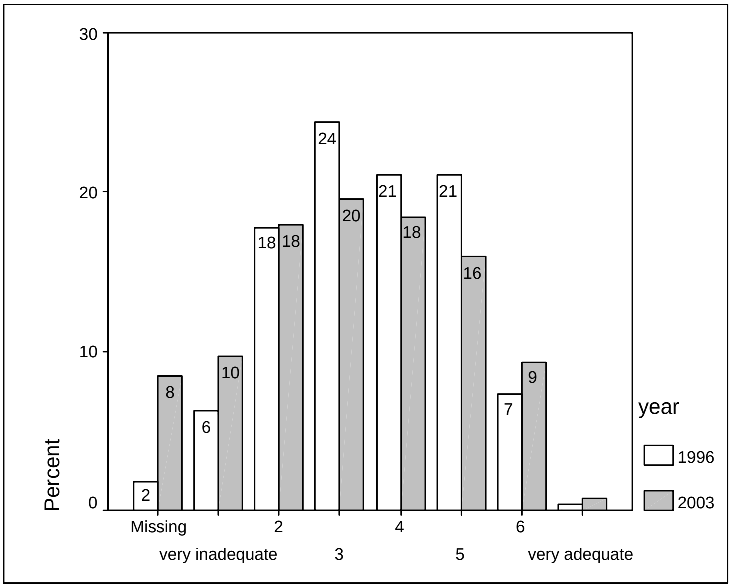
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
How well do you think atmospheric climate models can deal with precipitation	1996	538	3.16	1.452	.063
	2003	532	3.29	1.553	.067

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
How well do you think atmospheric climate models can deal with precipitation	Equal variances assumed	6.161	.013	-1.390	1068	.165	-.13	.092	-.308	.053
	Equal variances not assumed			-1.389	1061.448	.165	-.13	.092	-.308	.053

Figure 6. How well do you think *atmospheric* climate models can deal with atmospheric convection?



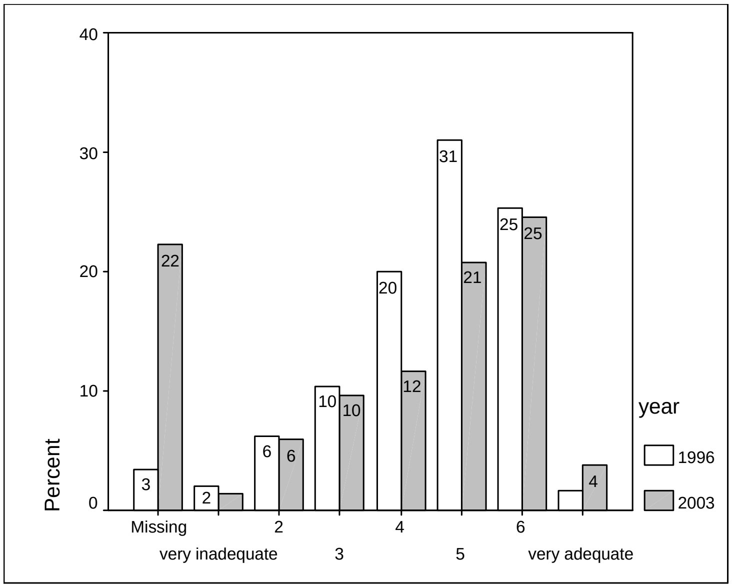
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
How well do you think atmospheric climate models can deal with atmospheric convection	1996	536	3.57	1.383	.060
	2003	511	3.48	1.527	.068

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
How well do you think atmospheric climate models can deal with atmospheric convection	Equal variances assumed	7.340	.007	1.058	1045	.290	.10	.090	-.081	.272
	Equal variances not assumed			1.055	1023.026	.291	.10	.090	-.082	.272

Figure 7. To what extent do you think that *ocean* models can deal with hydrodynamics?



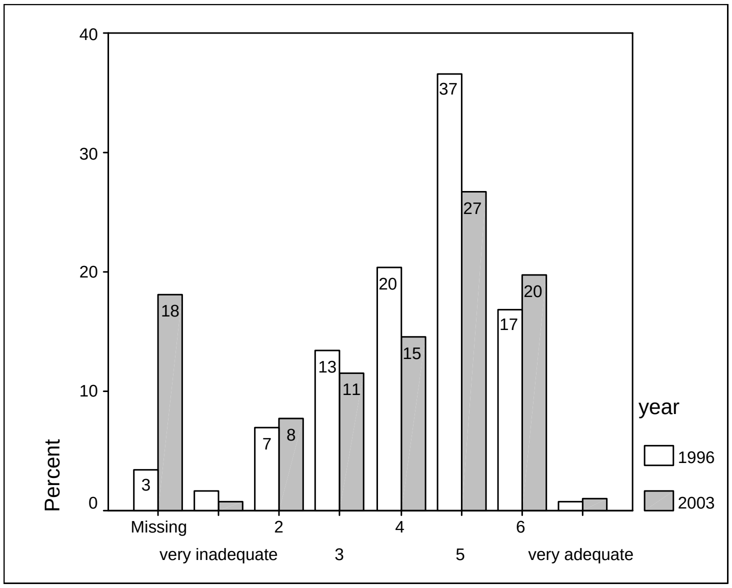
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
To what extent do you think that ocean models can deal with hydrodynamics	1996	527	4.60	1.313	.057
	2003	434	4.71	1.434	.069

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
To what extent do you think that ocean models can deal with hydrodynamics	Equal variances assumed	4.974	.026	-1.309	959	.191	-.12	.089	-.290	.058
	Equal variances not assumed			-1.298	888.488	.195	-.12	.090	-.292	.060

Figure 8. To what extent do you think that *ocean* models can deal with heat transport in the ocean?



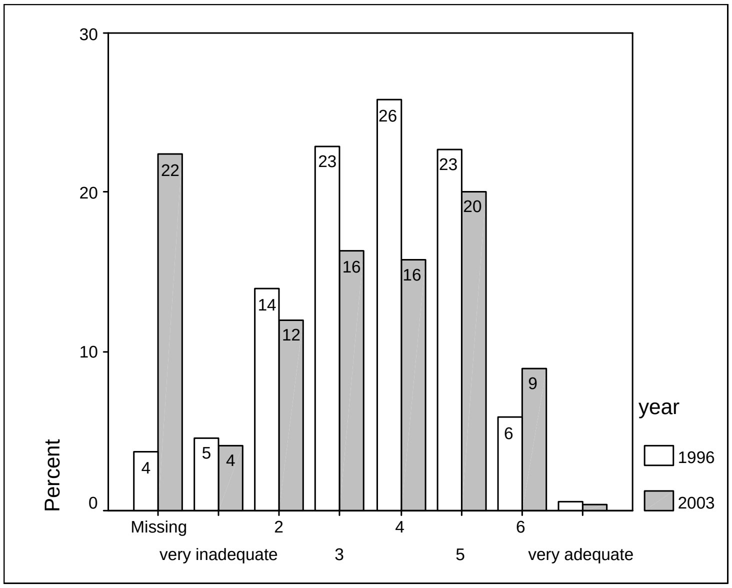
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
To what extent do you think that ocean models can deal with heat transport in the ocean	1996	527	4.42	1.247	.054
	2003	457	4.49	1.328	.062

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
To what extent do you think that ocean models can deal with heat transport in the ocean	Equal variances assumed	3.921	.048	-.911	982	.362	-.07	.082	-.236	.086
	Equal variances not assumed			-.907	942.366	.364	-.07	.083	-.237	.087

Figure 9. To what extent do you think that *ocean* models can deal with oceanic convection?



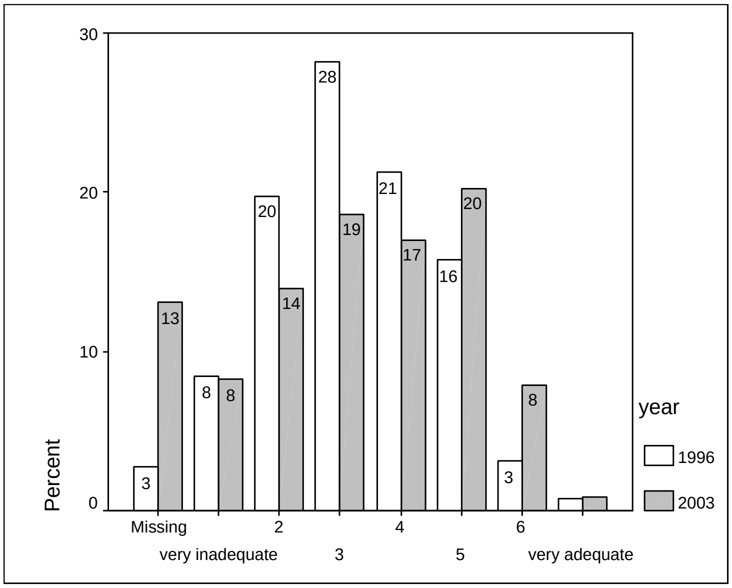
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
To what extent do you think that ocean models can deal with oceanic convection	1996	526	3.71	1.300	.057
	2003	433	3.82	1.429	.069

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
To what extent do you think that ocean models can deal with oceanic convection	Equal variances assumed	7.007	.008	-1.350	957	.177	-.12	.088	-.292	.054
	Equal variances not assumed			-1.338	883.539	.181	-.12	.089	-.294	.056

Figure 10. To what extent do you think that *ocean* models can deal with the coupling of atmospheric models and ocean models?



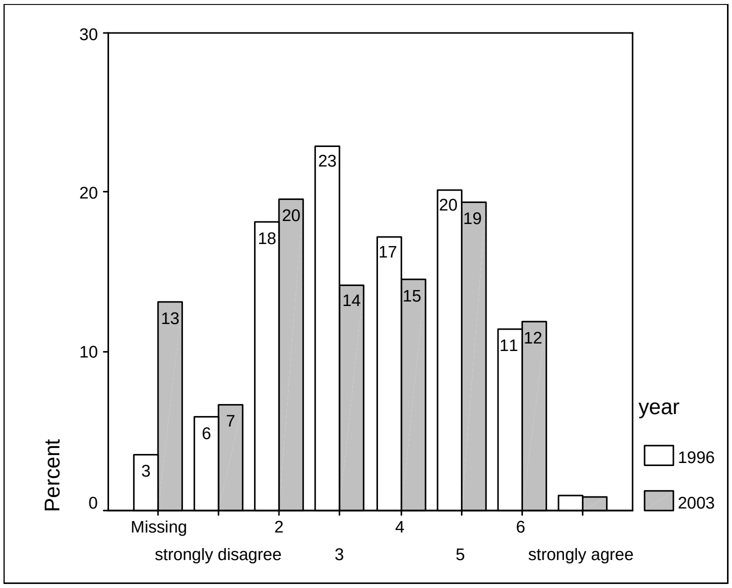
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
To what extent do you think that ocean models can deal with the coupling of atmospheric and ocean models	1996	531	3.29	1.320	.057
	2003	485	3.62	1.505	.068

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
To what extent do you think that ocean models can deal with the coupling of atmospheric and ocean models	Equal variances assumed	17.073	.000	-3.755	1014	.000	-.33	.089	-.507	-.159
	Equal variances not assumed			-3.733	967.249	.000	-.33	.089	-.508	-.158

Figure 11. The current state of scientific knowledge is developed well enough to allow for a reasonable assessment of the effects of turbulence.



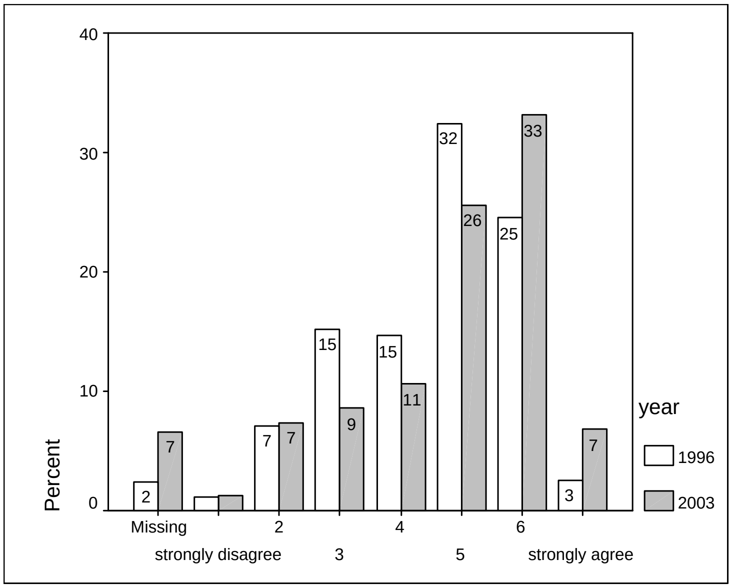
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
The current state of scientific knowledge is developed well enough to allow for a reasonable assessment of the effects of turbulence	1996	527	3.68	1.483	.065
	2003	485	3.68	1.586	.072

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
The current state of scientific knowledge is developed well enough to allow for a reasonable assessment of the effects of turbulence	Equal variances assumed	5.639	.018	-.074	1010	.941	-.01	.096	-.196	.182
	Equal variances not assumed			-.074	987.91	.941	-.01	.097	-.197	.183

Figure 12. The current state of scientific knowledge is developed well enough to allow for a reasonable assessment of the effects of surface albedo.



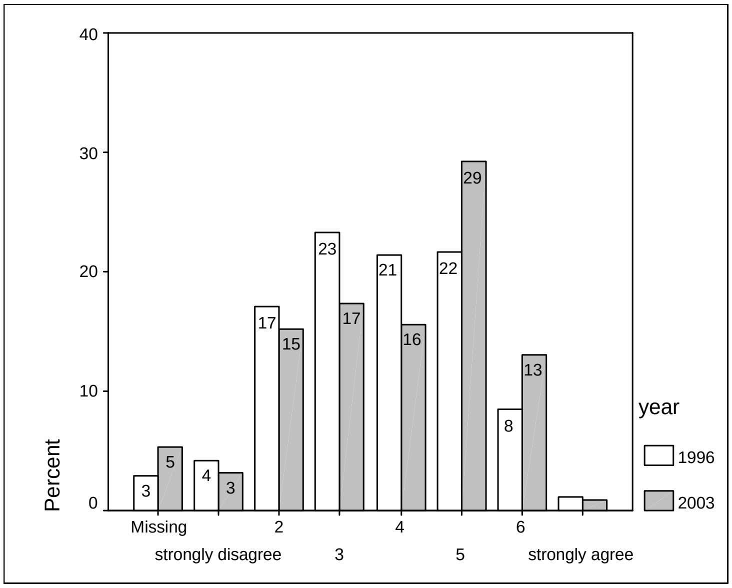
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
The current state of scientific knowledge is developed well enough to allow for a reasonable assessment of the effects of surface albedo	1996	533	4.58	1.339	.058
	2003	521	4.91	1.431	.063

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
The current state of scientific knowledge is developed well enough to allow for a reasonable assessment of the effects of surface albedo	Equal variances assumed	.000	.991	-3.934	1052	.000	-.34	.085	-.503	-.168
	Equal variances not assumed			-3.931	1043.710	.000	-.34	.085	-.503	-.168

Figure 13. The current state of scientific knowledge is developed well enough to allow for a reasonable assessment of the effects of land surface processes.



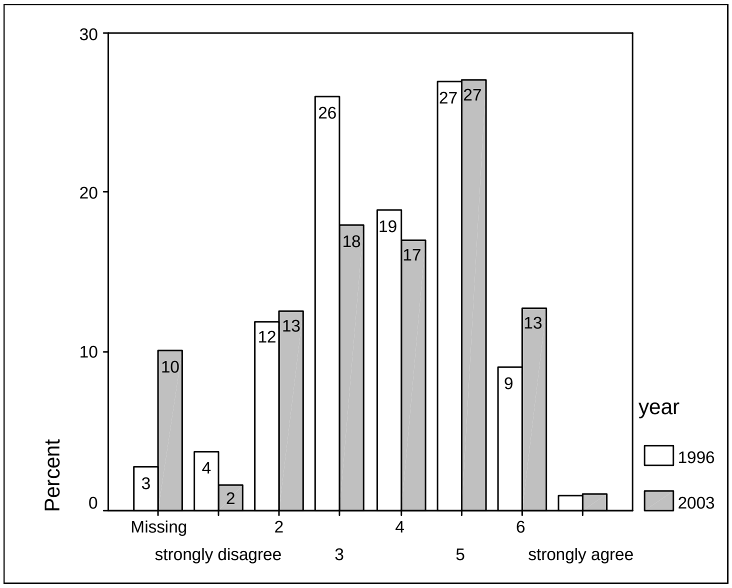
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
The current state of scientific knowledge is developed well enough to allow for a reasonable assessment of the effects of land surface proceses	1996	530	3.71	1.387	.060
	2003	528	4.01	1.444	.063

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
The current state of scientific knowledge is developed well enough to allow for a reasonable assessment of the effects of land surface proceses	Equal variances assumed	1.036	.309	-3.403	1056	.001	-.30	.087	-.467	-.125
	Equal variances not assumed			-3.403	1053.932	.001	-.30	.087	-.467	-.125

Figure 14. The current state of scientific knowledge is developed well enough to allow for a reasonable assessment of the effects of sea-ice.



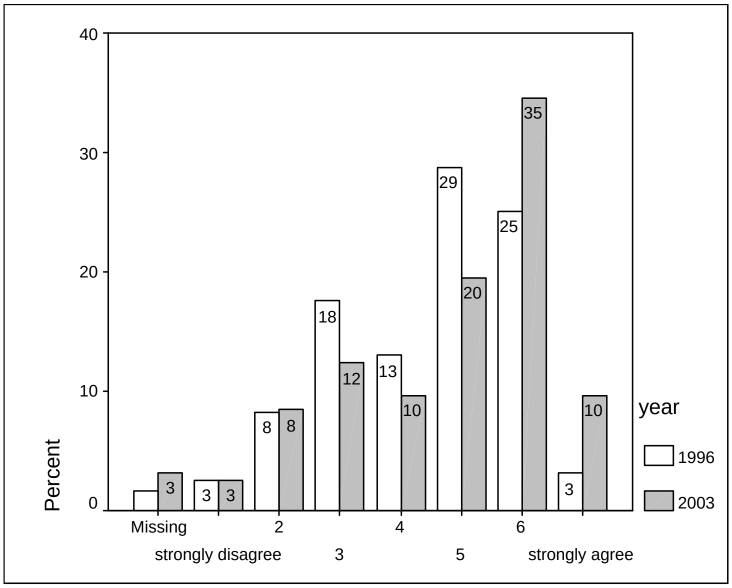
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
The current state of scientific knowledge is developed well enough to allow for a reasonable assessment of the effects of sea ice	1996	531	3.86	1.346	.058
	2003	502	4.09	1.374	.061

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
The current state of scientific knowledge is developed well enough to allow for a reasonable assessment of the effects of sea ice	Equal variances assumed	.301	.584	-2.637	1031	.008	-.22	.085	-.389	-.057
	Equal variances not assumed			-2.636	1024.932	.009	-.22	.085	-.389	-.057

Figure 15. The current state of scientific knowledge is developed well enough to allow for a reasonable assessment of the effects of green-house gases.



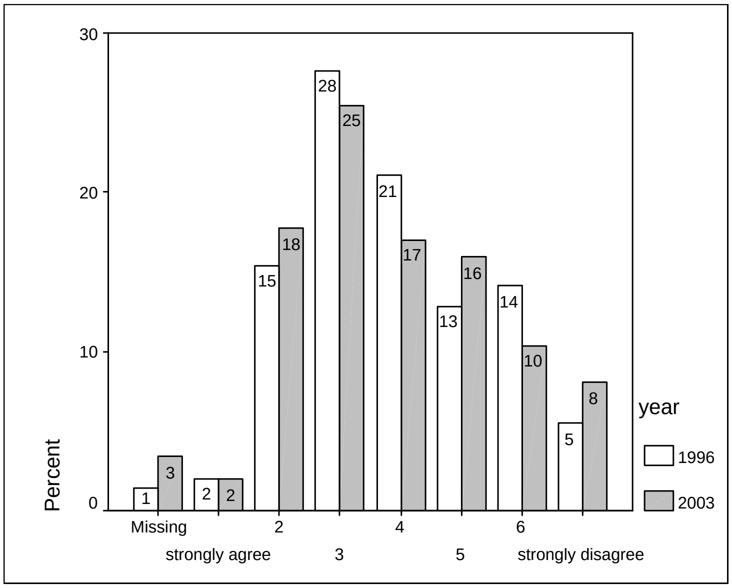
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
The current state of scientific knowledge is developed well enough to allow for a reasonable assessment of the effects of greenhouse gases	1996	537	4.47	1.458	.063
	2003	540	4.84	1.595	.069

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
The current state of scientific knowledge is developed well enough to allow for a reasonable assessment of the effects of greenhouse gases	Equal variances assumed	2.724	.099	-3.908	1075	.000	-.36	.093	-.547	-.181
	Equal variances not assumed			-3.909	1067.473	.000	-.36	.093	-.547	-.181

Figure 16. Climate models accurately verify the climatic conditions for which they are calibrated.



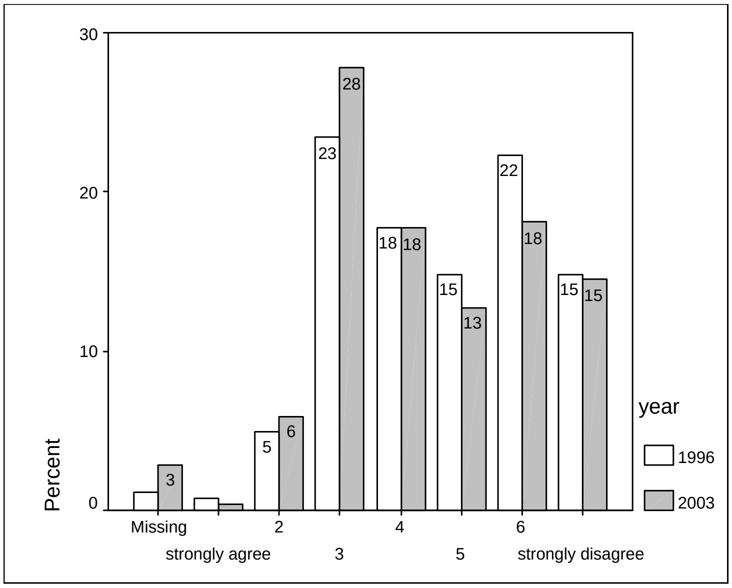
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
Climate models accurately verify the climatic conditions for which they are calibrated	1996	538	3.93	1.514	.065
	2003	539	3.94	1.591	.069

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Climate models accurately verify the climatic conditions for which they are calibrated	Equal variances assumed	2.449	.118	-.099	1075	.921	-.01	.095	-.195	.176
	Equal variances not assumed			-.099	1072.607	.921	-.01	.095	-.195	.176

Figure 17. Climate models can accurately predict climatic conditions of the future.



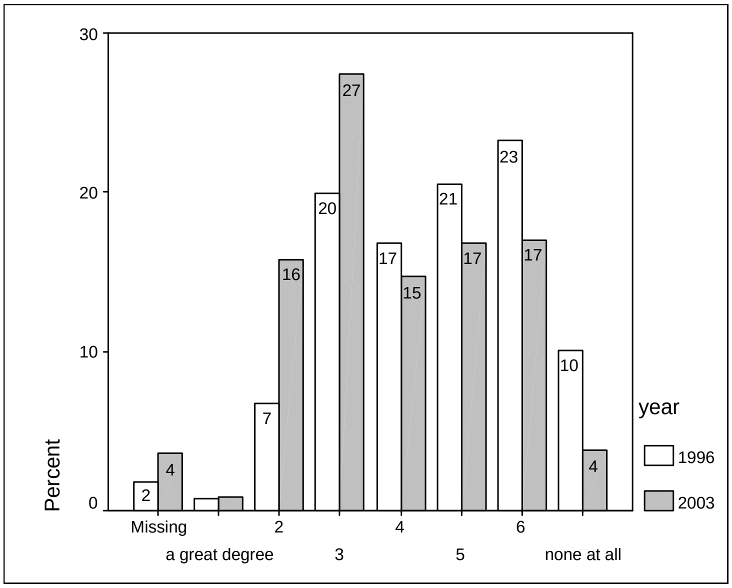
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
Climate models can accurately predict climatic conditions of the future.	1996	540	4.69	1.560	.067
	2003	542	4.53	1.583	.068

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Climate models can accurately predict climatic conditions of the future.	Equal variances assumed	.492	.483	1.668	1080	.096	.16	.096	-.028	.347
	Equal variances not assumed			1.669	1079.871	.096	.16	.096	-.028	.347

Figure 18. To what degree do you think the current state of scientific knowledge is able to provide reasonable *predictions* of inter-annual variability?



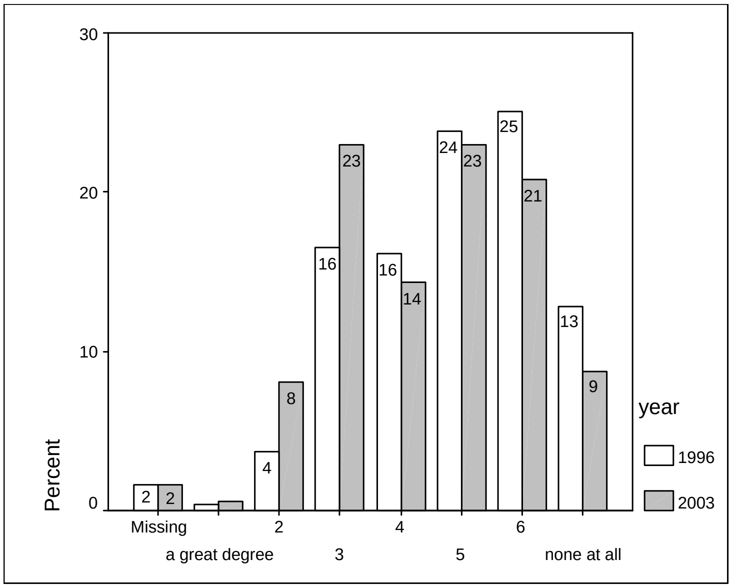
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
To what degree do you think the current state of scientific knowledge is able to provide reasonable predictions of inter-annual variability	1996	536	4.63	1.496	.065
	2003	538	4.01	1.503	.065

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
To what degree do you think the current state of scientific knowledge is able to provide reasonable predictions of inter-annual variability	Equal variances assumed	.030	.863	6.789	1072	.000	.62	.092	.442	.801
	Equal variances not assumed			6.789	1071.999	.000	.62	.092	.442	.801

Figure 19. To what degree do you think the current state of scientific knowledge is able to provide reasonable *predictions* of climatic variability of time scales of 10 years?



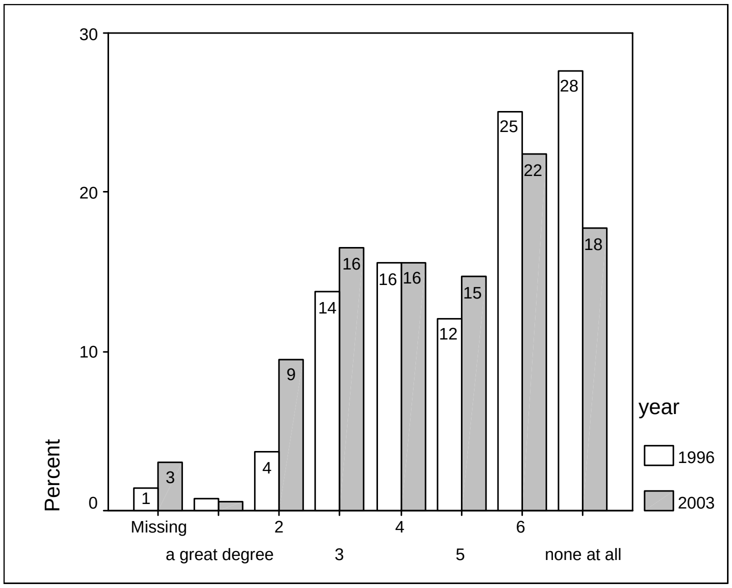
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
To what degree do you think the current state of scientific knowledge is able to provide reasonable predictions of climatic variablity of time scales of 10 years	1996	537	4.89	1.413	.061
	2003	549	4.51	1.495	.064

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
To what degree do you think the current state of scientific knowledge is able to provide reasonable predictions of climatic variablity of time scales of 10 years	Equal variances assumed	8.273	.004	4.304	1084	.000	.38	.088	.207	.553
	Equal variances not assumed			4.306	1082.729	.000	.38	.088	.207	.553

Figure 20. To what degree do you think the current state of scientific knowledge is able to provide reasonable *predictions* of climatic variability of time scales of 100 years?



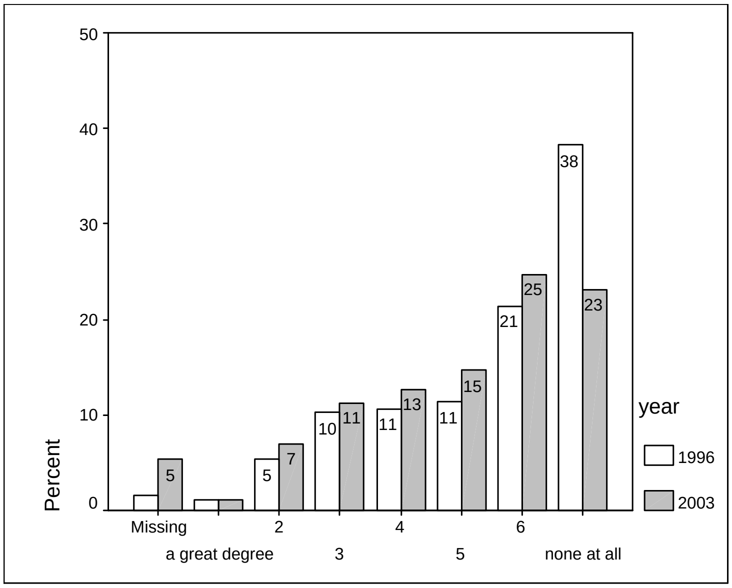
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
To what degree do you think the current state of scientific knowledge is able to provide reasonable predictions of climatic variablity of time scales of 100 years	1996	538	5.24	1.579	.068
	2003	541	4.78	1.653	.071

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
To what degree do you think the current state of scientific knowledge is able to provide reasonable predictions of climatic variablity of time scales of 100 years	Equal variances assumed	1.877	.171	4.652	1077	.000	.46	.098	.265	.651
	Equal variances not assumed			4.653	1075.303	.000	.46	.098	.265	.651

Figure 21. To what degree do you think the current state of scientific knowledge is able to provide reasonable *predictions* of climatic variability of time scales of greater than 100 years?



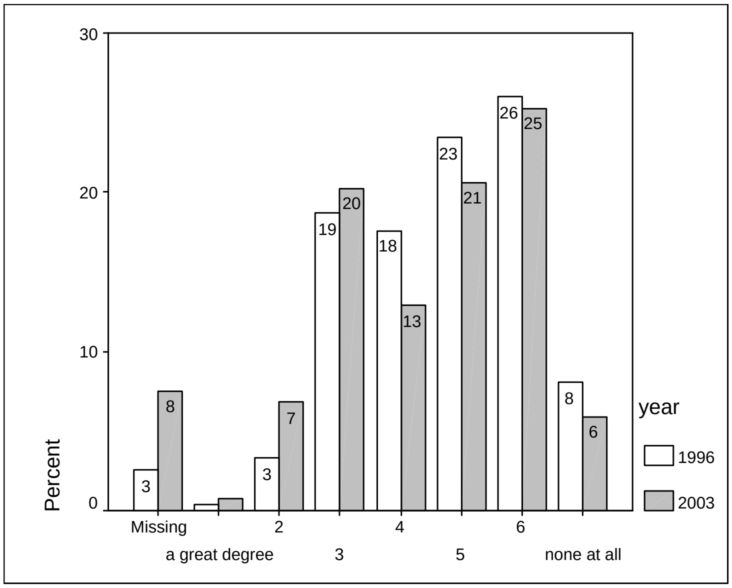
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
To what degree do you think the current state of scientific knowledge is able to provide reasonable predictions of climatic variablity of time scales of >100 years	1996	537	5.47	1.657	.072
	2003	528	5.11	1.640	.071

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
To what degree do you think the current state of scientific knowledge is able to provide reasonable predictions of climatic variablity of time scales of >100 years	Equal variances assumed	.308	.579	3.594	1063	.000	.36	.101	.165	.561
	Equal variances not assumed			3.594	1062.953	.000	.36	.101	.165	.561

Figure 22. To what degree do you think that, through the process of downscaling, it is now possible to determine local climate impacts?



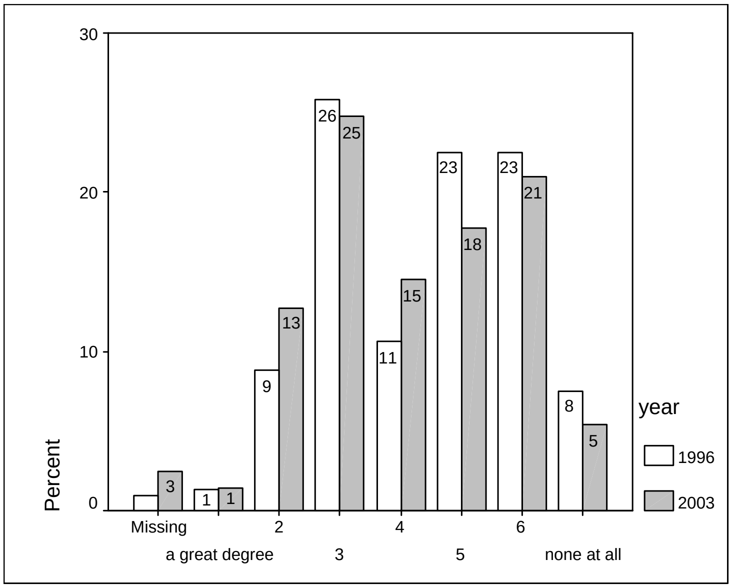
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
To what degree do you think that, through the process of downscaling, it is now possible to determine local climate impacts	1996	532	4.75	1.361	.059
	2003	516	4.57	1.467	.065

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
To what degree do you think that, through the process of downscaling, it is now possible to determine local climate impacts	Equal variances assumed	8.008	.005	2.062	1046	.039	.18	.087	.009	.352
	Equal variances not assumed			2.060	1034.484	.040	.18	.087	.009	.352

Figure 23. To what degree can we explicitly state the detrimental effects that climate change will have on society?



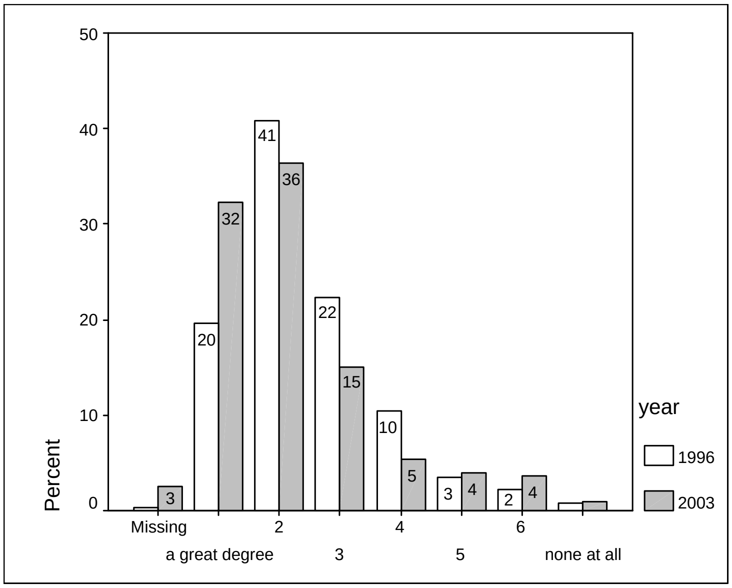
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
To what degree can we explicitly state the detrimental effects that climate change will have on society	1996	541	4.43	1.539	.066
	2003	544	4.22	1.550	.066

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
To what degree can we explicitly state the detrimental effects that climate change will have on society	Equal variances assumed	.003	.953	2.280	1083	.023	.21	.094	.030	.398
	Equal variances not assumed			2.280	1082.996	.023	.21	.094	.030	.398

Figure 24. To what degree do you think climate change will have detrimental effects for some societies?



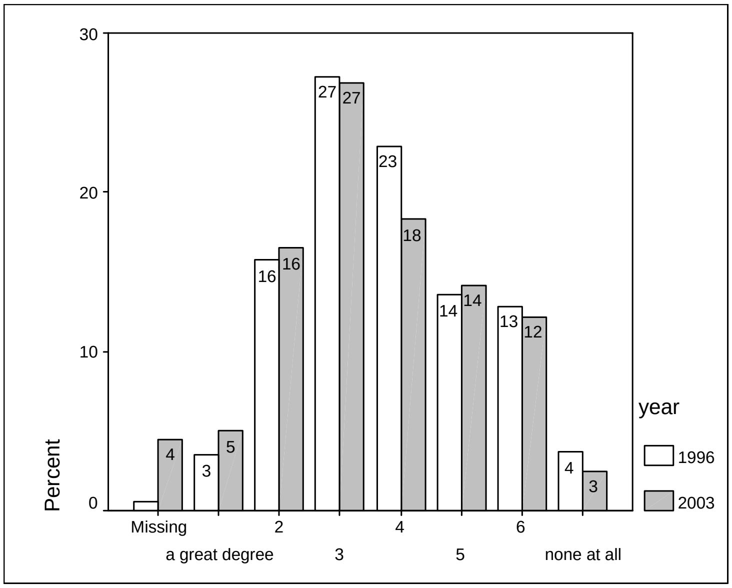
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
To what degree do you think climate change will have detrimental effects for some societies	1996	544	2.47	1.215	.052
	2003	544	2.25	1.353	.058

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
To what degree do you think climate change will have detrimental effects for some societies	Equal variances assumed	1.056	.304	2.806	1086	.005	.22	.078	.066	.372
	Equal variances not assumed			2.806	1073.702	.005	.22	.078	.066	.372

Figure 25. To what degree do you think climate change will have a detrimental effect for the society in which you live?



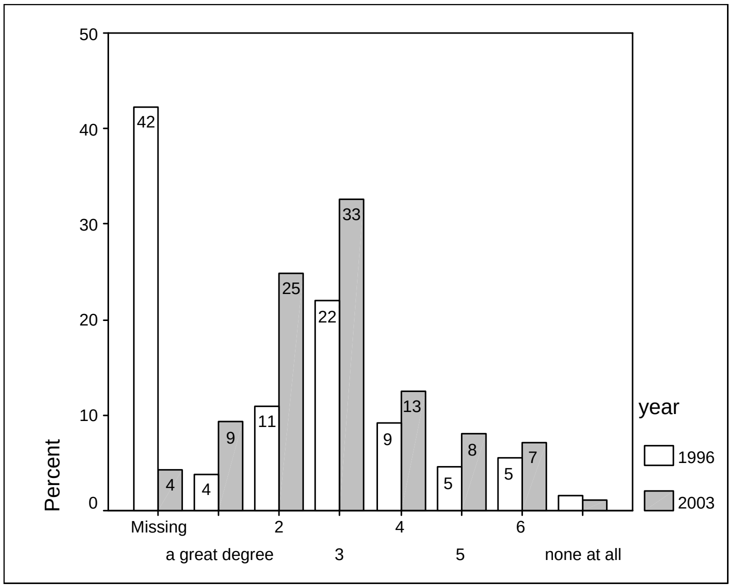
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
To what degree do you think climate change will have a detrimental effect for the society in which you live	1996	543	3.81	1.474	.063
	2003	533	3.70	1.501	.065

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
To what degree do you think climate change will have a detrimental effect for the society in which you live	Equal variances assumed	.967	.326	1.219	1074	.223	.11	.091	-.067	.289
	Equal variances not assumed			1.218	1072.575	.223	.11	.091	-.067	.289

Figure 26. To what degree do you think that climate change might have some positive effects for some societies?



Group Statistics

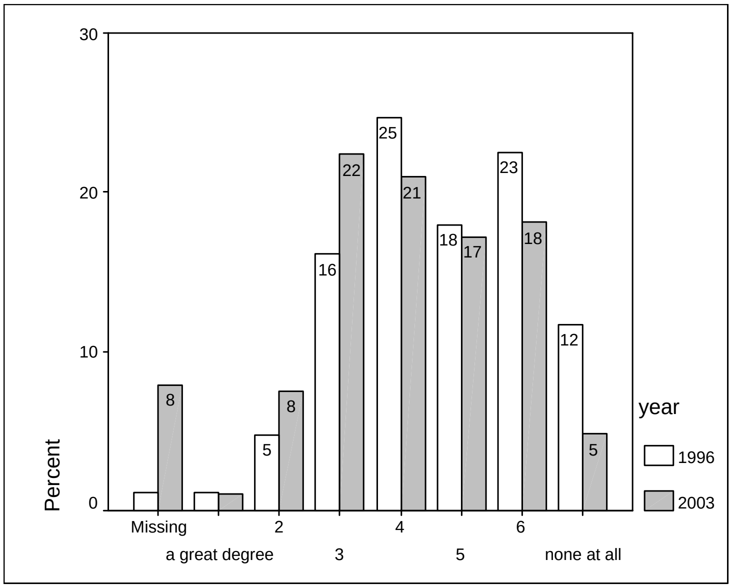
	year	N	Mean	Std. Deviation	Std. Error Mean
To what degree do you think that climate change might have some positive effects for some societies	1996	315	3.39	1.449	.082
	2003	534	3.11	1.401	.061

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
To what degree do you think that climate change might have some positive effects for some societies	Equal variances assumed	1.597	.207	2.772	847	.006	.28	.101	.082	.477
	Equal variances not assumed			2.748	640.969	.006	.28	.102	.080	.479

The large reduction in 1996 N is the result of the question being missed in the translation of the questionnaire into German, therefore N, in this case, does not include the German sample.

Figure 27. To what degree do you think that climate change might have some positive effects for the society in which you live?.



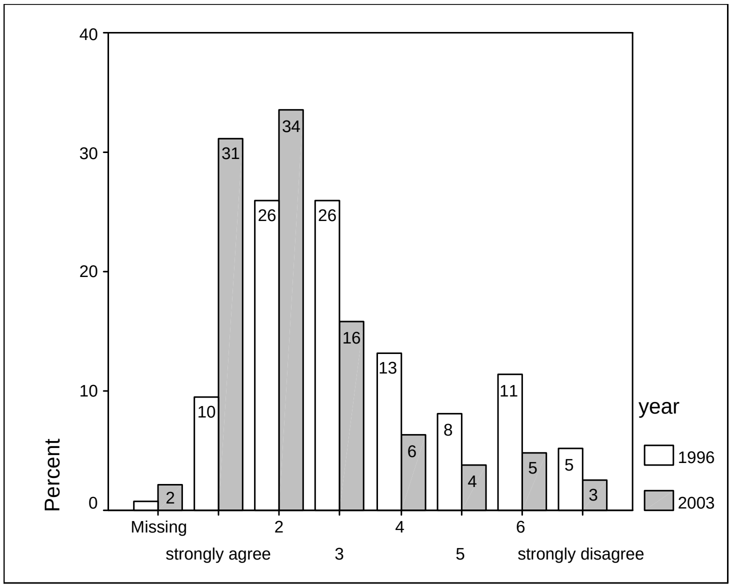
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
To what degree do you think that climate change might have some positive effects for the society in which you live	1996	540	4.70	1.459	.063
	2003	514	4.30	1.427	.063

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower	Upper
To what degree do you think that climate change might have some positive effects for the society in which you live	Equal variances assumed	.402	.526	4.544	1052	.000	.40	.089	.230	.579
	Equal variances not assumed			4.547	1051.211	.000	.40	.089	.230	.579

Figure 28. We can say for certain that global warming is a process already underway.



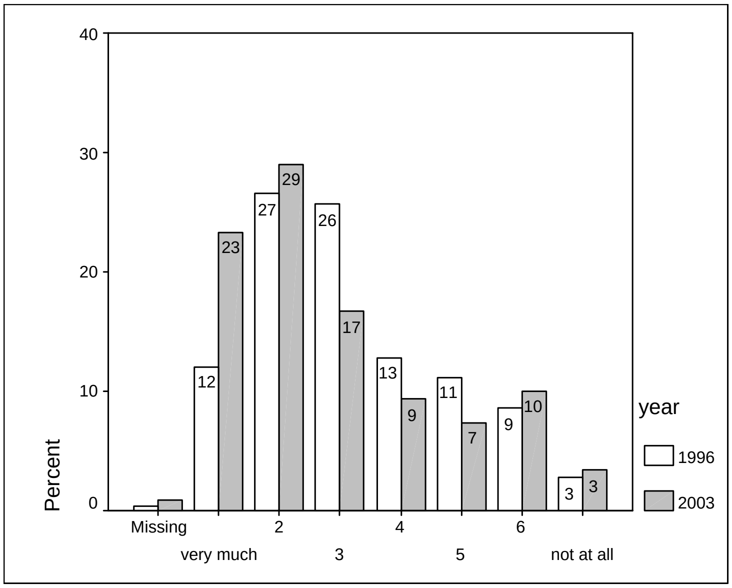
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
We can say for certain that global warming is a process already underway.	1996	542	3.39	1.677	.072
	2003	546	2.41	1.533	.066

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
We can say for certain that global warming is a process already underway.	Equal variances assumed	13.253	.000	10.054	1086	.000	.98	.097	.788	1.170
	Equal variances not assumed			10.050	1075.889	.000	.98	.097	.788	1.170

Figure 29. How much do you think global climate change is one of the leading problems facing humanity?



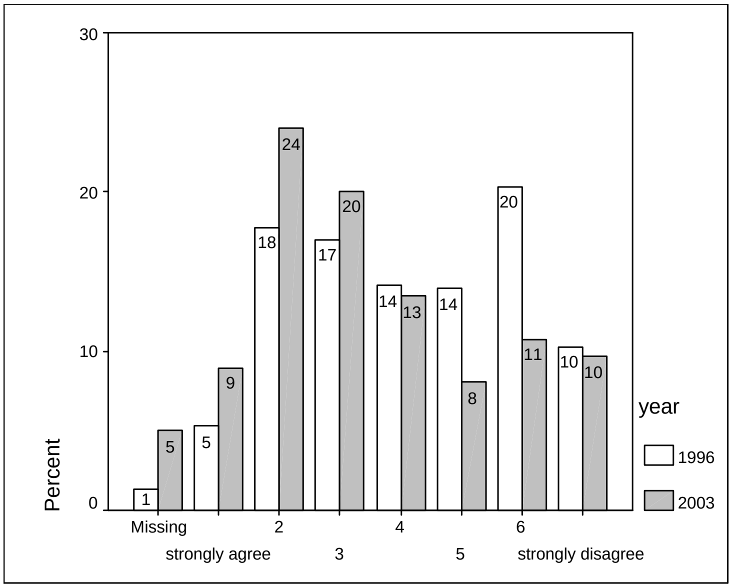
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
How much do you think global climate change is one of the leading problems facing humanity	1996	544	3.21	1.583	.068
	2003	553	2.92	1.756	.075

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
How much do you think global climate change is one of the leading problems facing humanity	Equal variances assumed	6.613	.010	2.899	1095	.004	.29	.101	.095	.491
	Equal variances not assumed			2.901	1086.791	.004	.29	.101	.095	.491

Figure 30. Climate change is mostly the result of anthropogenic causes.



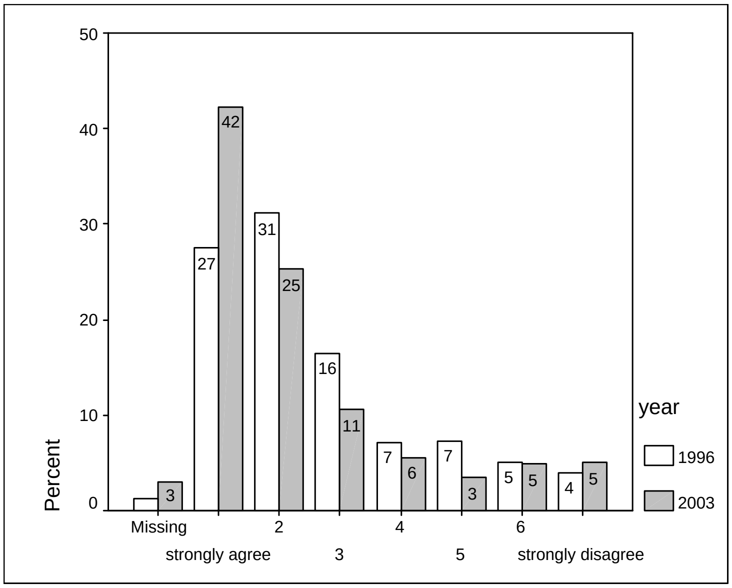
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
Climate change is mostly the result of anthropogenic causes	1996	539	4.17	1.804	.078
	2003	530	3.62	1.840	.080

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Climate change is mostly the result of anthropogenic causes	Equal variances assumed	.003	.957	4.968	1067	.000	.55	.111	.335	.772
	Equal variances not assumed			4.967	1065.553	.000	.55	.111	.335	.772

Figure 31. We can say for certain that, without change in human behavior, global warming will definitely occur some time in the future.



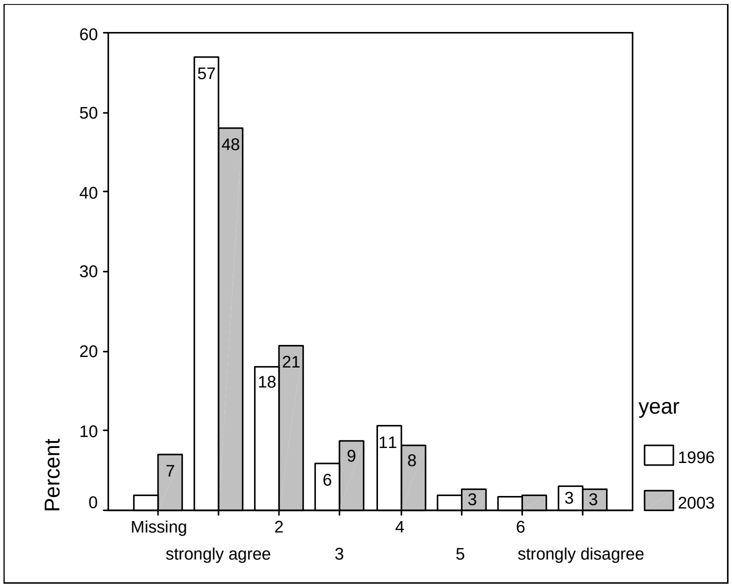
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
We can say for certain that, without change in human behavior, global warming will definitely occur some time in the future.	1996	539	2.67	1.677	.072
	2003	541	2.35	1.751	.075

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
We can say for certain that, without change in human behavior, global warming will definitely occur some time in the future.	Equal variances assumed	.037	.847	3.035	1078	.002	.32	.104	.112	.521
	Equal variances not assumed			3.035	1076.349	.002	.32	.104	.112	.521

Figure 32. Climate should be considered a natural resource.



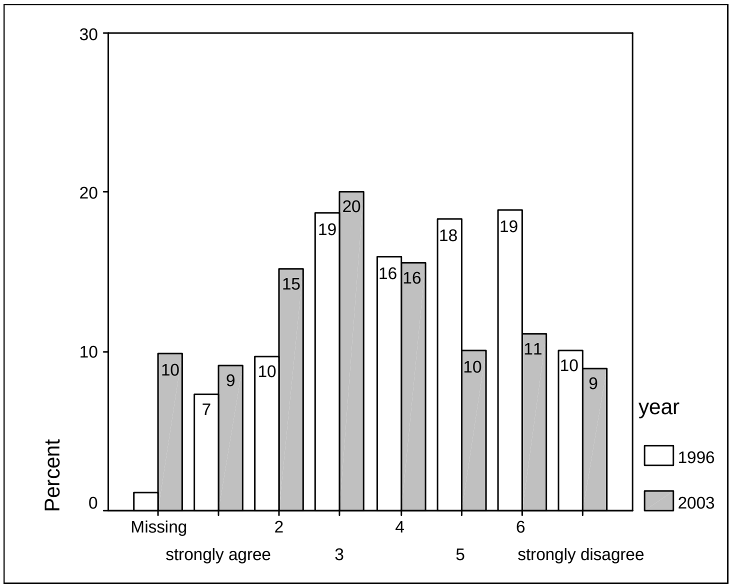
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
Climate should be considered a natural resource.	1996	536	1.98	1.519	.066
	2003	519	2.07	1.512	.066

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Climate should be considered a natural resource.	Equal variances assumed	.003	.955	-1.004	1053	.316	-.09	.093	-.277	.089
	Equal variances not assumed			-1.004	1052.176	.316	-.09	.093	-.277	.089

Figure 33. Assuming climate change will occur, it will occur so suddenly, that a lack of preparation could result in devastation of some areas of the world.



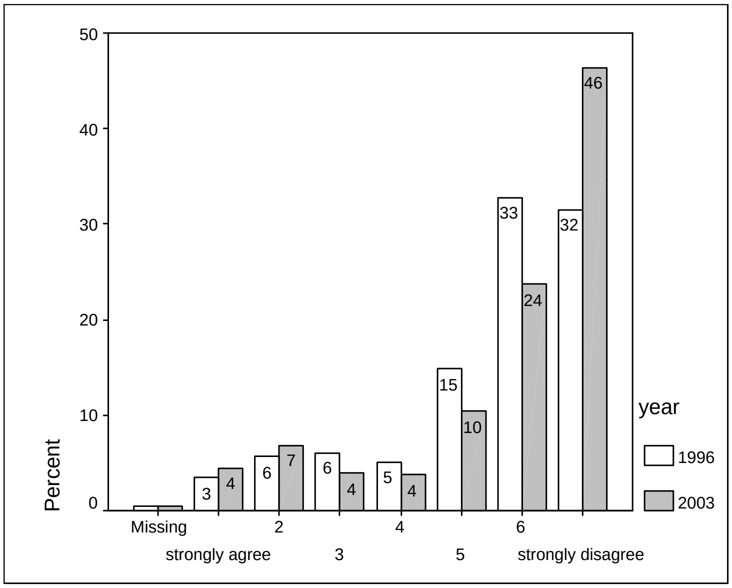
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
Assuming climate change will occur, it will occur so suddenly, that a lack of preparation could result in devastation of some areas of the world	1996	540	4.26	1.746	.075
	2003	503	3.79	1.809	.081

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Assuming climate change will occur, it will occur so suddenly, that a lack of preparation could result in devastation of some areas of the world	Equal variances assumed	.310	.578	4.301	1041	.000	.47	.110	.258	.690
	Equal variances not assumed			4.296	1029.320	.000	.47	.110	.257	.690

Figure 34. There is enough uncertainty about the phenomenon of global warming that there is no need for immediate policy decisions.



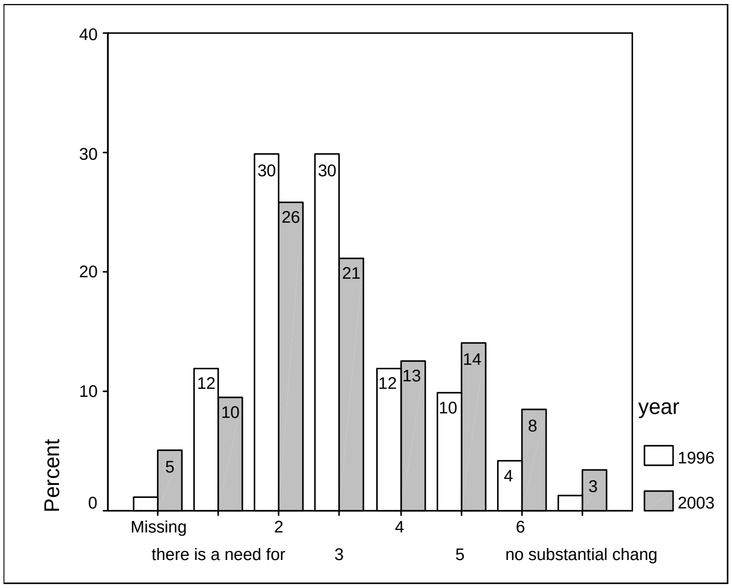
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
There is enough uncertainty about the phenomenon of global warming that there is no need for immediate policy decisions.	1996	543	5.48	1.656	.071
	2003	555	5.67	1.788	.076

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
There is enough uncertainty about the phenomenon of global warming that there is no need for immediate policy decisions.	Equal variances assumed	2.105	.147	-1.823	1096	.069	-.19	.104	-.394	.015
	Equal variances not assumed			-1.824	1092.698	.068	-.19	.104	-.394	.014

Figure 35. To what degree do you think it would be possible for most societies to adapt to climate change without having to make any substantial changes?



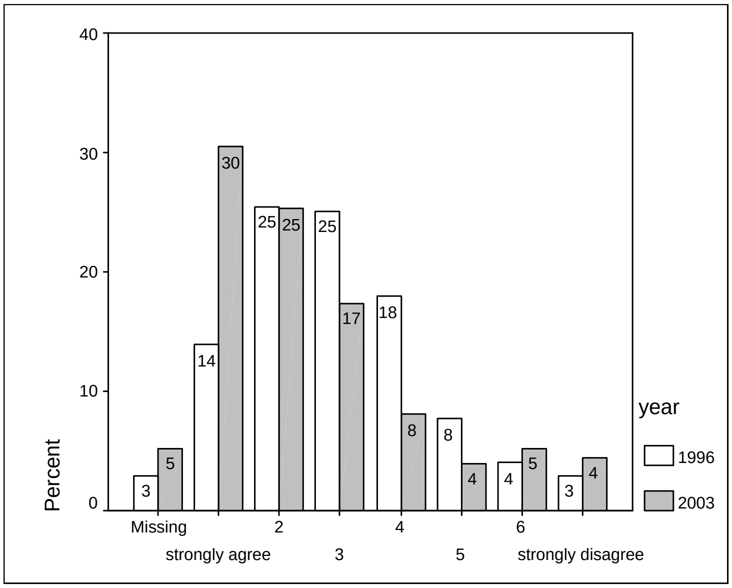
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
To what degree do you think it would be possible for most societies to adapt to climate change without having to make any substantial changes to current societal practices	1996	540	2.96	1.377	.059
	2003	529	3.36	1.625	.071

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
To what degree do you think it would be possible for most societies to adapt to climate change without having to make any substantial changes to current societal practices	Equal variances assumed	38.195	.000	-4.426	1067	.000	-.41	.092	-.588	-.227
	Equal variances not assumed			-4.418	1031.863	.000	-.41	.092	-.588	-.226

Figure 36. To what extent do you agree or disagree that the IPCC reports are of great use to the advancement of climate science?



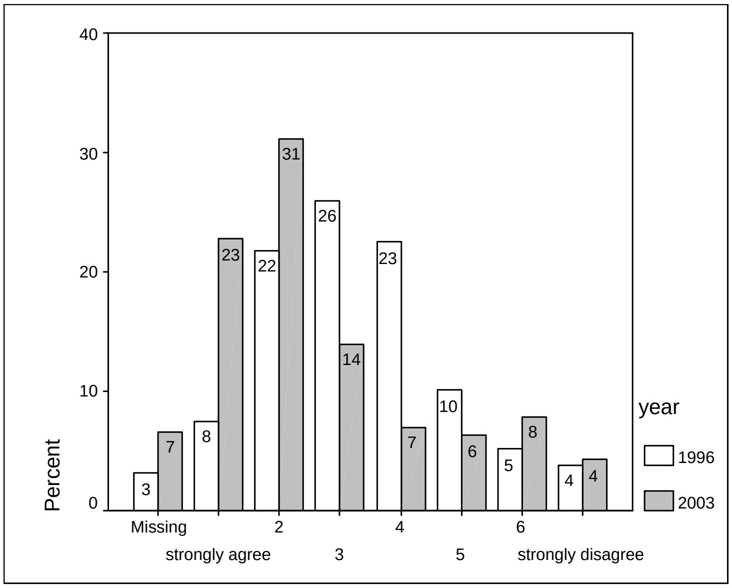
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
The IPCC reports are of great use to the advancement of climate science	1996	530	3.04	1.482	.064
	2003	529	2.61	1.705	.074

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
The IPCC reports are of great use to the advancement of climate science	Equal variances assumed	12.427	.000	4.350	1057	.000	.43	.098	.234	.620
	Equal variances not assumed			4.350	1036.336	.000	.43	.098	.234	.620

Figure 37. To what extent do you agree or disagree that the IPCC reports accurately reflect the consensus of thought within the scientific community?



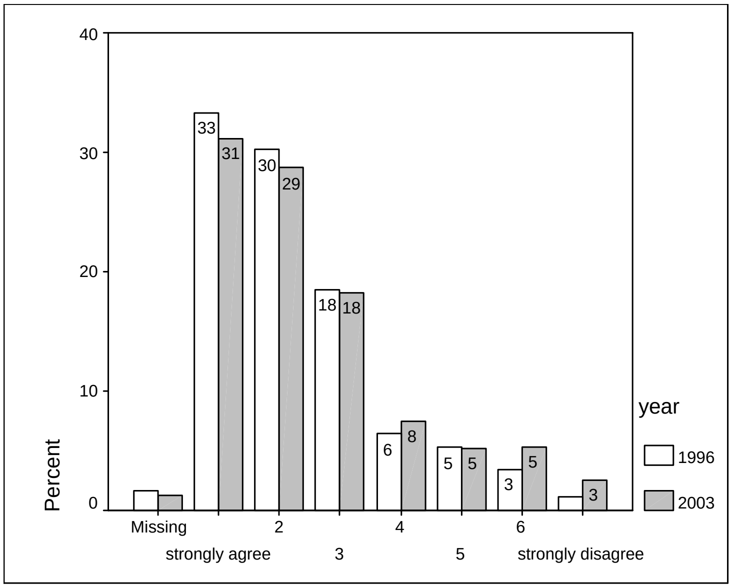
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
The IPCC reports accurately reflect the consensus of thought within the scientific community	1996	529	3.38	1.468	.064
	2003	521	2.83	1.768	.077

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
The IPCC reports accurately reflect the consensus of thought within the scientific community	Equal variances assumed	18.419	.000	5.515	1048	.000	.55	.100	.356	.749
	Equal variances not assumed			5.507	1008.270	.000	.55	.100	.356	.750

Figure 38. To what extent do you agree or disagree that climate change is an extremely complex subject, full of uncertainties, and this allows for a greater range of interpretations than many other scientific endeavors?



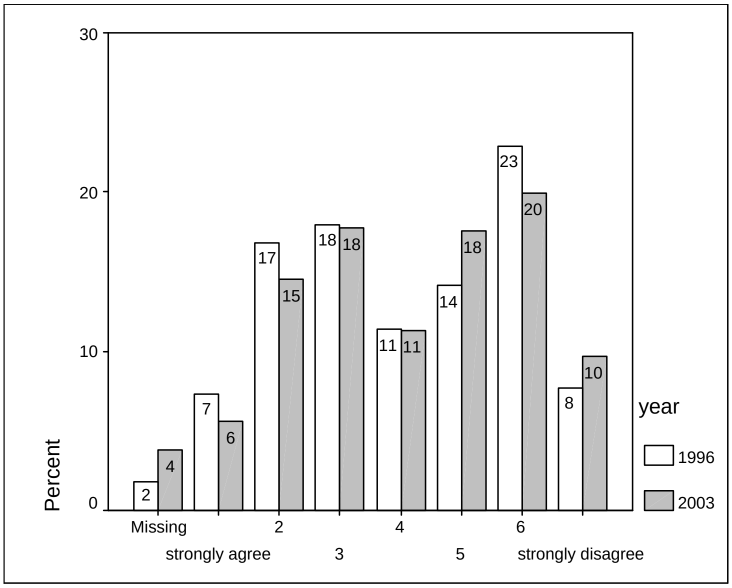
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
Climate change is an extremely complex subject, full of uncertainties, and this allows for a greater range of assumptions and interpretations than many other scientific endeavors	1996	537	2.34	1.417	.061
	2003	551	2.52	1.586	.068

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Climate change is an extremely complex subject, full of uncertainties, and this allows for a greater range of assumptions and interpretations than many other scientific endeavors	Equal variances assumed	7.493	.006	-2.034	1086	.042	-.19	.091	-.365	-.007
	Equal variances not assumed			-2.036	1077.929	.042	-.19	.091	-.364	-.007

Figure 39. To what extent do you agree or disagree that the users of the information produced by General Circulation Models are most often aware of the uncertainties associated with such models?



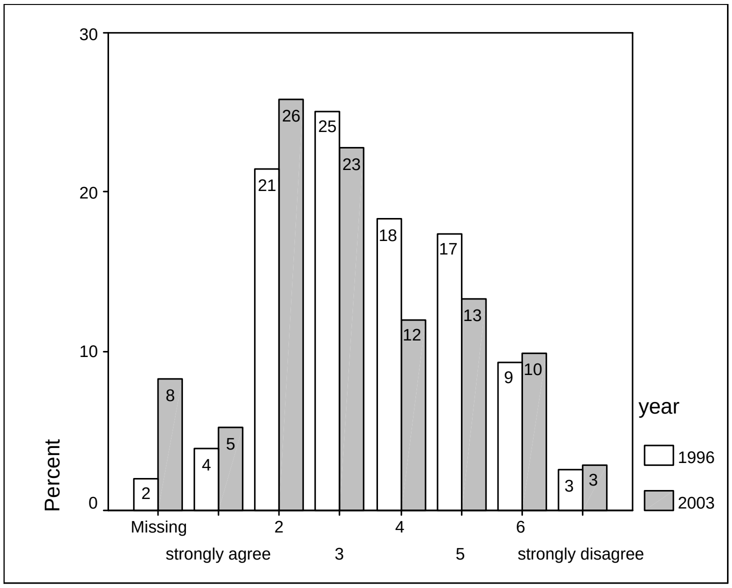
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
The users of the information produced by General Circulation Models are most often aware of the uncertainties associated with such models	1996	536	4.10	1.822	.079
	2003	537	4.24	1.781	.077

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
The users of the information produced by General Circulation Models are most often aware of the uncertainties associated with such models	Equal variances assumed	.643	.423	-1.302	1071	.193	-.14	.110	-.359	.073
	Equal variances not assumed			-1.302	1070.339	.193	-.14	.110	-.359	.073

Figure 40. To what extent do you agree or disagree that in general, those scientists producing GCMs are knowledgeable about what data are needed by those scientists that endeavor to study the impacts of climate change?



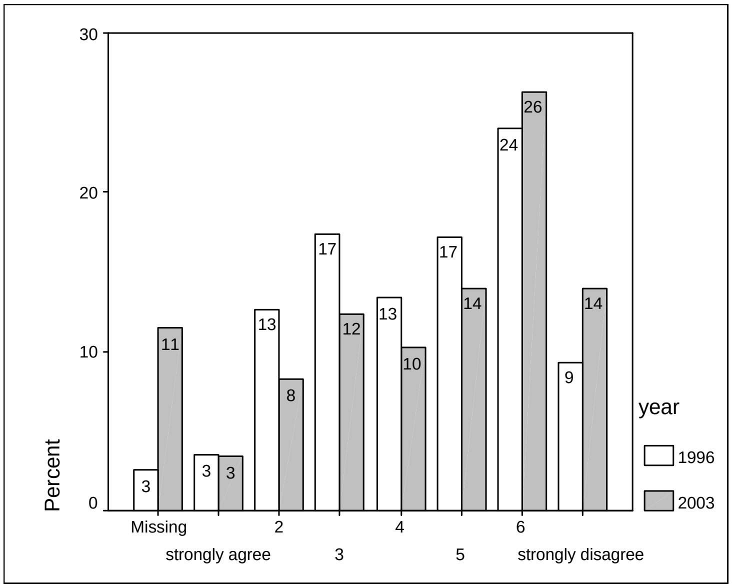
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
In general, those scientists producing GCMs are knowledgeable about what data are needed by those scientists that endeavor to study the impacts of climate change	1996	535	3.64	1.466	.063
	2003	512	3.47	1.570	.069

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
In general, those scientists producing GCMs are knowledgeable about what data are needed by those scientists that endeavor to study the impacts of climate change	Equal variances assumed	3.807	.051	1.735	1045	.083	.16	.094	-.021	.347
	Equal variances not assumed			1.733	1032.008	.083	.16	.094	-.022	.347

Figure 41. To what extent do you agree or disagree that CO2 will have controlled emission levels in the near future?



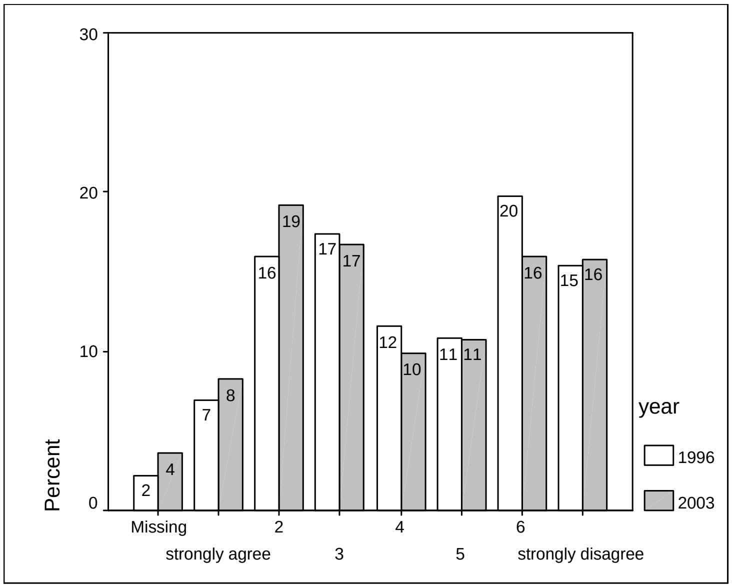
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
CO2 will have controlled emission levels in the near future.	1996	532	4.41	1.697	.074
	2003	494	4.79	1.737	.078

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
CO2 will have controlled emission levels in the near future.	Equal variances assumed	.004	.947	-3.486	1024	.001	-.37	.107	-.584	-.163
	Equal variances not assumed			-3.483	1014.359	.001	-.37	.107	-.584	-.163

Figure 42. To what extent do you agree or disagree that natural scientists have established enough physical evidence to turn the issue of global climate change over to social scientists for matters of policy discussion?



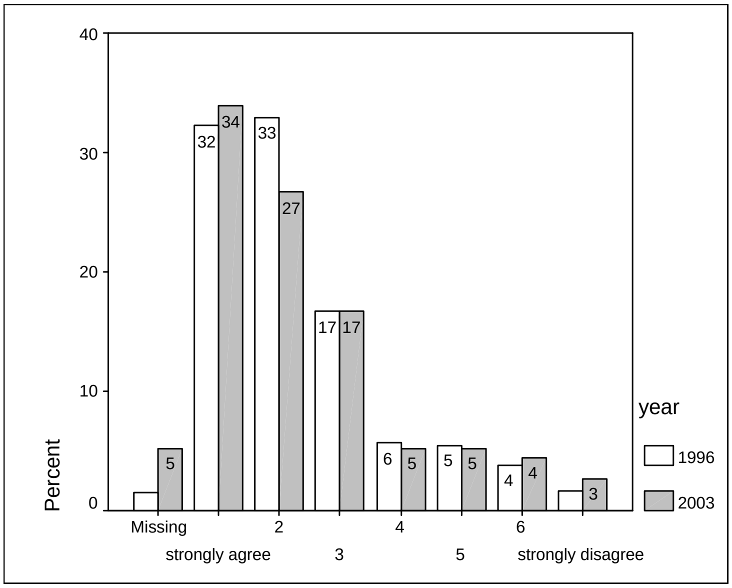
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
Natural scientists have established enough physical evidence to turn the issue of global climate change over to social scientists for matters of policy discussion	1996	534	4.27	1.934	.084
	2003	538	4.11	1.995	.086

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Natural scientists have established enough physical evidence to turn the issue of global climate change over to social scientists for matters of policy discussion	Equal variances assumed	.922	.337	1.364	1070	.173	.16	.120	-.072	.399
	Equal variances not assumed			1.364	1069.404	.173	.16	.120	-.072	.399

Figure 43. To what extent do you agree or disagree that stabilizing CO2 emissions will require a fundamental restructuring of the global economy?



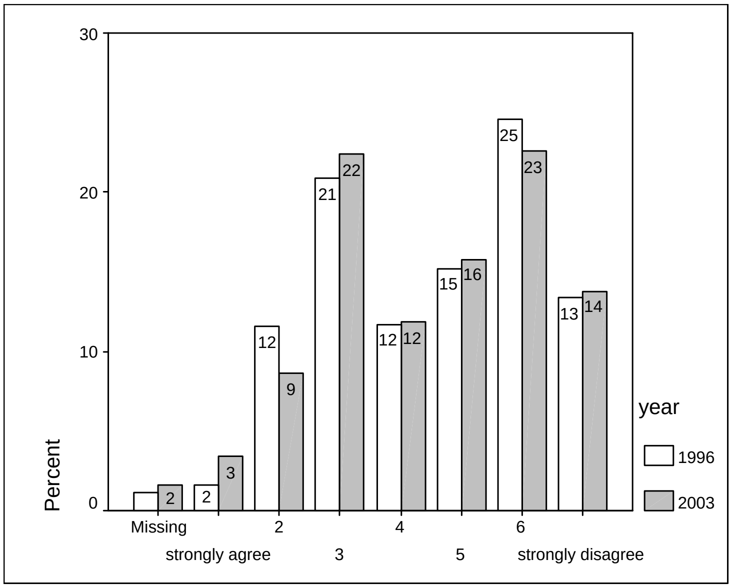
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
Stabilizing CO2 emissions will require a fundamental restructuring of the global economy.	1996	538	2.36	1.464	.063
	2003	529	2.42	1.593	.069

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Stabilizing CO2 emissions will require a fundamental restructuring of the global economy.	Equal variances assumed	4.204	.041	-.632	1065	.528	-.06	.094	-.243	.125
	Equal variances not assumed			-.631	1054.256	.528	-.06	.094	-.243	.125

Figure 44. To what extent do you agree or disagree that the climate sciences are developed well enough to provide information for local social impact assessments?



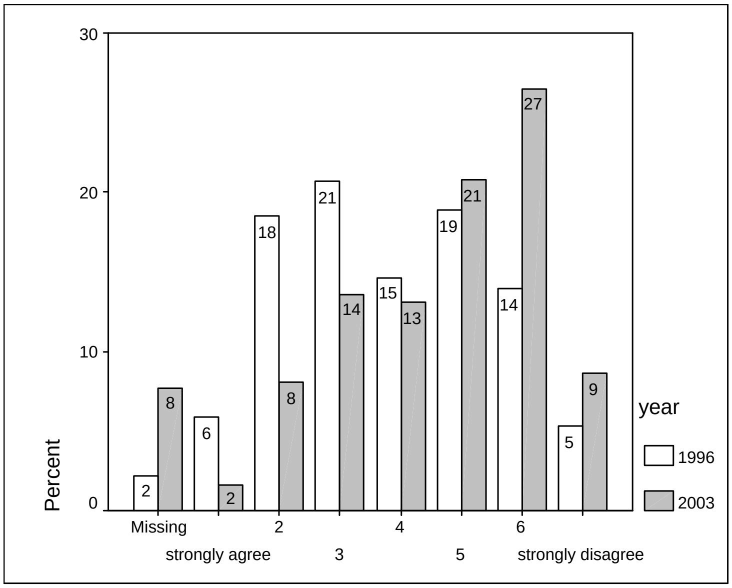
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
The climate sciences are developed well enough to provide information for local social impact assessments	1996	540	4.56	1.697	.073
	2003	549	4.53	1.718	.073

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
The climate sciences are developed well enough to provide information for local social impact assessments	Equal variances assumed	.015	.902	.265	1087	.791	.03	.103	-.176	.230
	Equal variances not assumed			.265	1086.976	.791	.03	.103	-.176	.230

Figure 45. To what extent do you agree or disagree that climate scientists are well attuned to the sensitivity of human social systems to climate impacts?



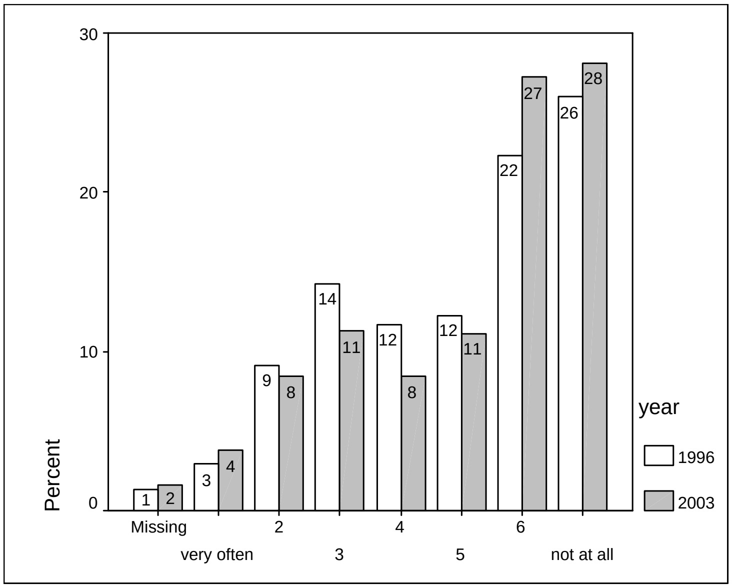
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
Climate scientists are well attuned to the sensitivity of human social systems to climate impacts	1996	534	3.87	1.657	.072
	2003	515	4.70	1.541	.068

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Climate scientists are well attuned to the sensitivity of human social systems to climate impacts	Equal variances assumed	4.975	.026	-8.433	1047	.000	-.83	.099	-1.028	-.640
	Equal variances not assumed			-8.444	1045.625	.000	-.83	.099	-1.028	-.640

Figure 46. How often are you contacted by the media for information pertaining to climate change?



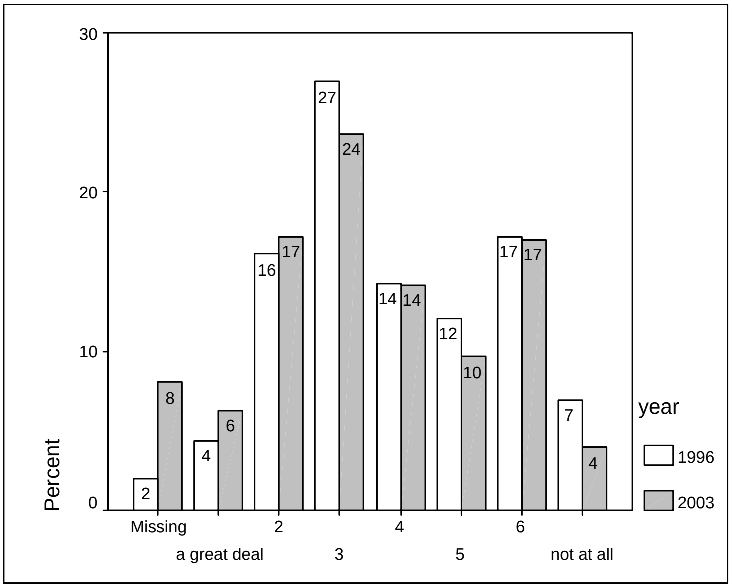
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
How often are you contacted by the media for information pertaining to climate change?	1996	539	4.95	1.814	.078
	2003	549	5.12	1.827	.078

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
How often are you contacted by the media for information pertaining to climate change?	Equal variances assumed	.046	.830	-1.592	1086	.112	-.18	.110	-.392	.041
	Equal variances not assumed			-1.593	1085.864	.112	-.18	.110	-.392	.041

Figure 47. To what degree do you think exposure to the media has the potential to change the attitude of the scientist?



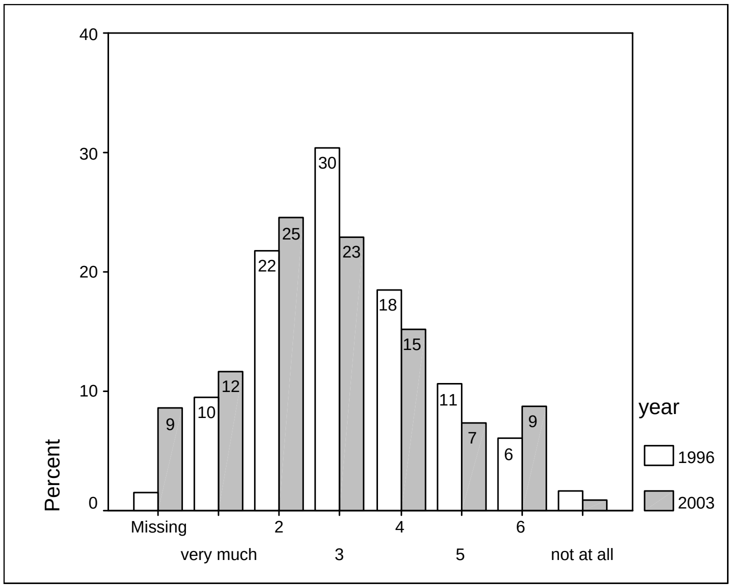
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
To what degree do you think exposure to the media has the potential to change the attitude of the scientist	1996	535	3.95	1.675	.072
	2003	513	3.77	1.674	.074

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
To what degree do you think exposure to the media has the potential to change the attitude of the scientist	Equal variances assumed	.017	.898	1.754	1046	.080	.18	.103	-.022	.385
	Equal variances not assumed			1.754	1044.172	.080	.18	.103	-.022	.385

Figure 48. How much do you think scientists actually enjoy the attention they receive in the popular media?



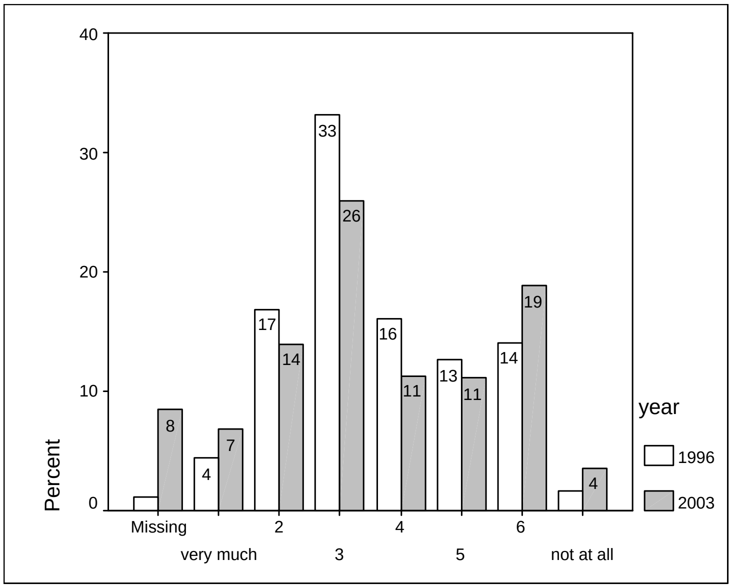
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
How much do you think scientists actually enjoy the attention they receive in the popular media	1996	538	3.24	1.412	.061
	2003	510	3.13	1.508	.067

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
How much do you think scientists actually enjoy the attention they receive in the popular media	Equal variances assumed	2.677	.102	1.202	1046	.230	.11	.090	-.069	.285
	Equal variances not assumed			1.200	1031.245	.231	.11	.090	-.069	.286

Figure 49. How much do you think that a scientist's exposure to publicity influences the direction of his or her future research?



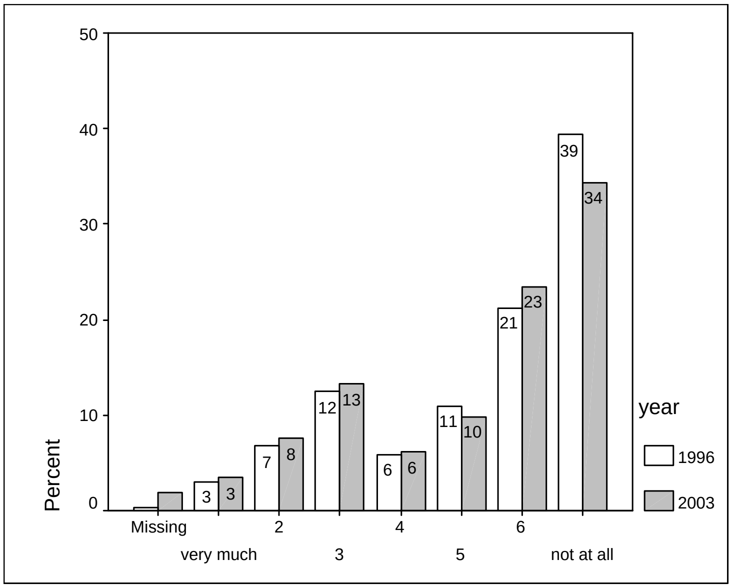
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
How much do you think that a scientist's exposure to publicity influences the direction of his or her future research	1996	540	3.65	1.466	.063
	2003	511	3.84	1.685	.075

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
How much do you think that a scientist's exposure to publicity influences the direction of his or her future research	Equal variances assumed	19.398	.000	-1.890	1049	.059	-.18	.097	-.375	.007
	Equal variances not assumed			-1.883	1011.360	.060	-.18	.098	-.375	.008

Figure 50. How much have you been involved with those people who make climate related policy decisions?



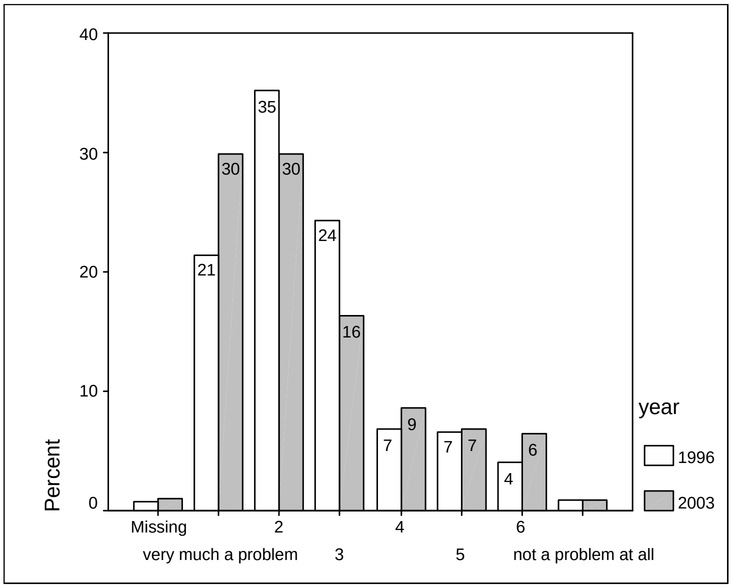
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
How much have you been involved with those people who make climate related policy decisions	1996	544	5.37	1.817	.078
	2003	547	5.24	1.855	.079

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
How much have you been involved with those people who make climate related policy decisions	Equal variances assumed	.681	.409	1.202	1089	.230	.13	.111	-.085	.352
	Equal variances not assumed			1.202	1088.746	.230	.13	.111	-.085	.352

Figure 51. How much would you rate global climate change as a problem that concerns the social and economic aspects of societies?



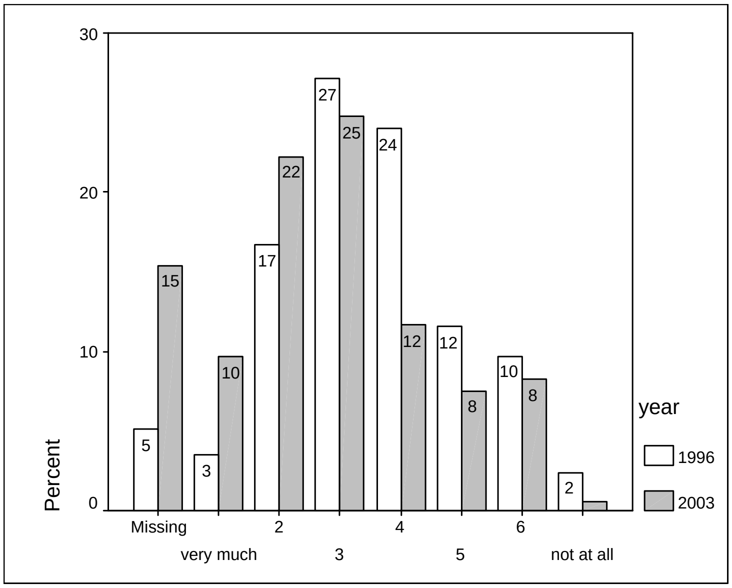
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
How much would you rate global climate change as a problem that concerns the social and economic aspects of societies	1996	542	2.57	1.373	.059
	2003	552	2.55	1.552	.066

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
How much would you rate global climate change as a problem that concerns the social and economic aspects of societies	Equal variances assumed	12.263	.000	.281	1092	.779	.02	.089	-.149	.199
	Equal variances not assumed			.281	1080.483	.779	.02	.089	-.149	.199

Figure 52. How much do you think the IPCC reports are used in the decision making process of climate related policy issues?



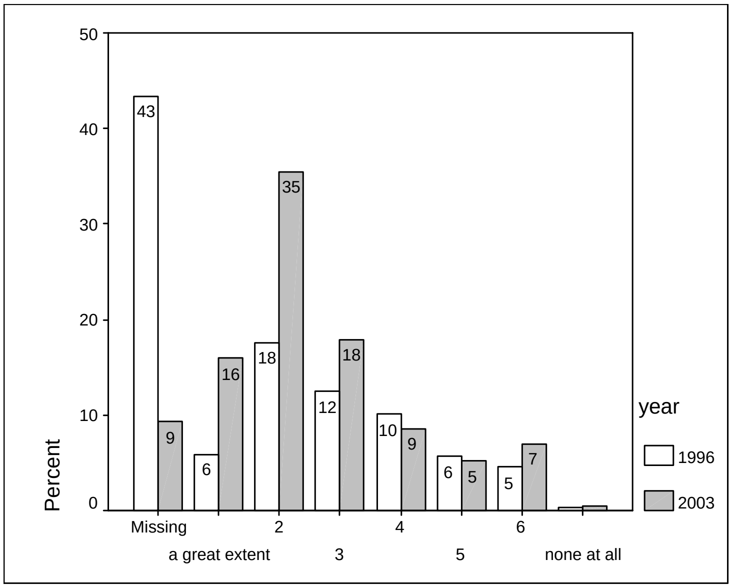
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
How much do you think the IPCC reports are used in the decision making process of climate related policy issues	1996	518	3.65	1.400	.062
	2003	472	3.14	1.476	.068

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
How much do you think the IPCC reports are used in the decision making process of climate related policy issues	Equal variances assumed	.186	.667	5.607	988	.000	.51	.091	.333	.692
	Equal variances not assumed			5.593	967.507	.000	.51	.092	.333	.692

Figure 53. To what extent are those who present the extremes of the climate debate, for example, those presenting the worst case scenarios or those claiming that climate change is a hoax, the people most likely to be listened to by those involved in making policy decisions? *The large reduction in 1996 N is the result of the question being poorly translated into German, therefore N, in this case, does not include the German sample.*



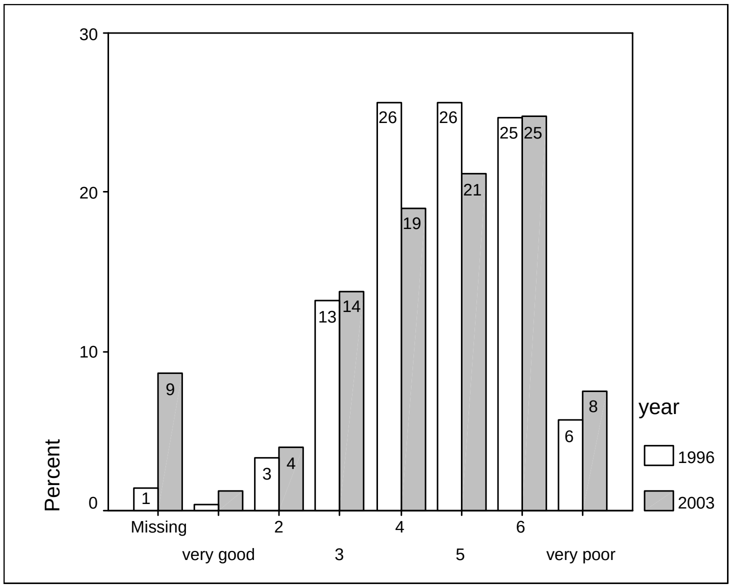
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
To what extent are those who present the extremes of the climate debate, for example, those presenting the worst case scenarios or those claiming that climate change is a hoax, the people most likely to be listened to by those involved in making policy de	1996	309	3.13	1.458	.083
	2003	506	2.72	1.461	.065

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
To what extent are those who present the extremes of the climate debate, for example, those presenting the worst case scenarios or those claiming that climate change is a hoax, the people most likely to be listened to by those involved in making policy de	Equal variances assumed	.232	.630	3.872	813	.000	.41	.105	.201	.615
	Equal variances not assumed			3.874	651.925	.000	.41	.105	.201	.615

Figure 54. How would you describe what you see as the working relationship between climate scientists and policy makers?



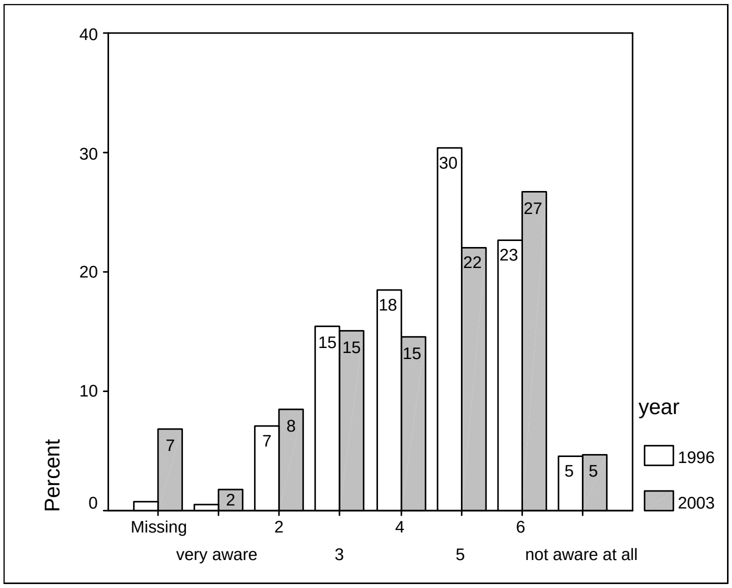
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
How would you describe what you see as the working relationship between climate scientists and policy makers	1996	538	4.72	1.251	.054
	2003	510	4.74	1.399	.062

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
How would you describe what you see as the working relationship between climate scientists and policy makers	Equal variances assumed	7.956	.005	-.221	1046	.825	-.02	.082	-.179	.143
	Equal variances not assumed			-.221	1018.378	.825	-.02	.082	-.179	.143

Figure 55. How much do you think climate scientists are aware of the information that policy makers incorporate into their decision making process?



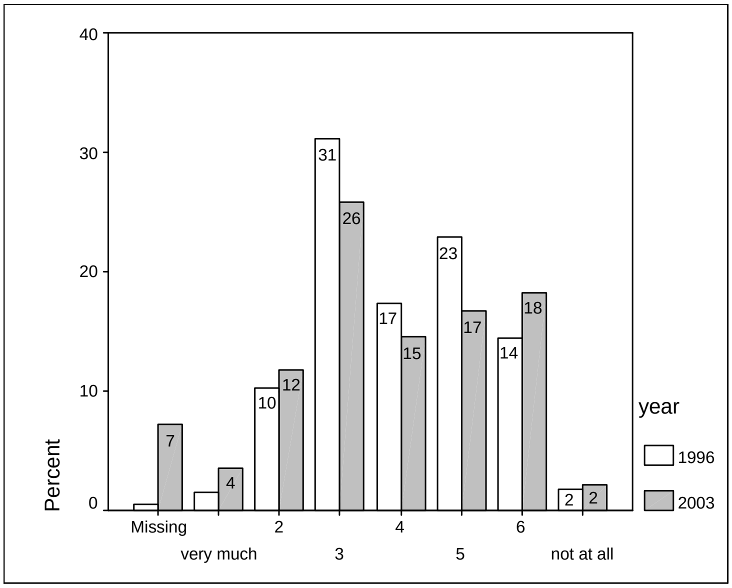
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
How much do you think climate scientists are aware of the information that policy makers incorporate into their decision making process	1996	542	4.59	1.337	.057
	2003	520	4.56	1.490	.065

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
How much do you think climate scientists are aware of the information that policy makers incorporate into their decision making process	Equal variances assumed	11.557	.001	.312	1060	.755	.03	.087	-.143	.197
	Equal variances not assumed			.312	1036.999	.755	.03	.087	-.144	.198

Figure 56. To what degree do you think that the results of scientific inquiry are instrumental in causing policy makers to redefine their perception of a climate related issue?



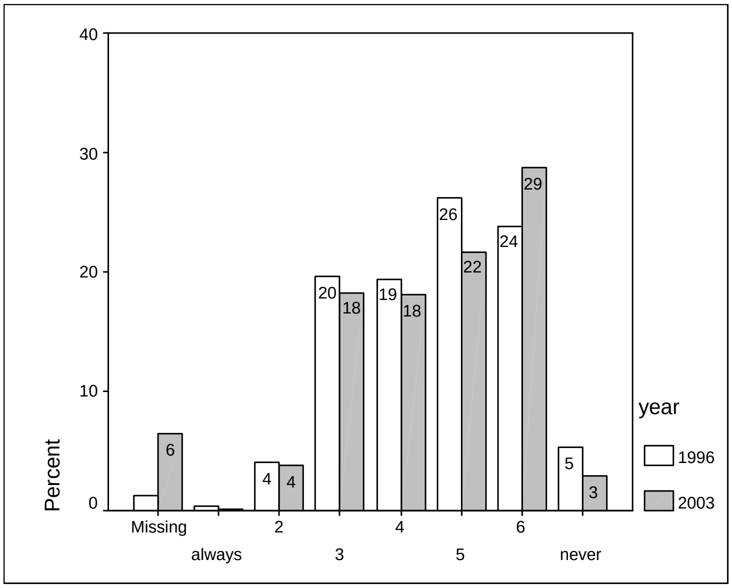
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
To what degree do you think that the results of scientific inquiry are instrumental in causing policy makers to redefine their perception of a climate related issue	1996	543	4.01	1.356	.058
	2003	518	3.99	1.522	.067

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
To what degree do you think that the results of scientific inquiry are instrumental in causing policy makers to redefine their perception of a climate related issue	Equal variances assumed	10.115	.002	.211	1059	.833	.02	.088	-.155	.192
	Equal variances not assumed			.211	1032.114	.833	.02	.089	-.155	.193

Figure 57. How often do you think policy makers draw on the most current and state-of-the-art knowledge of the climate sciences?



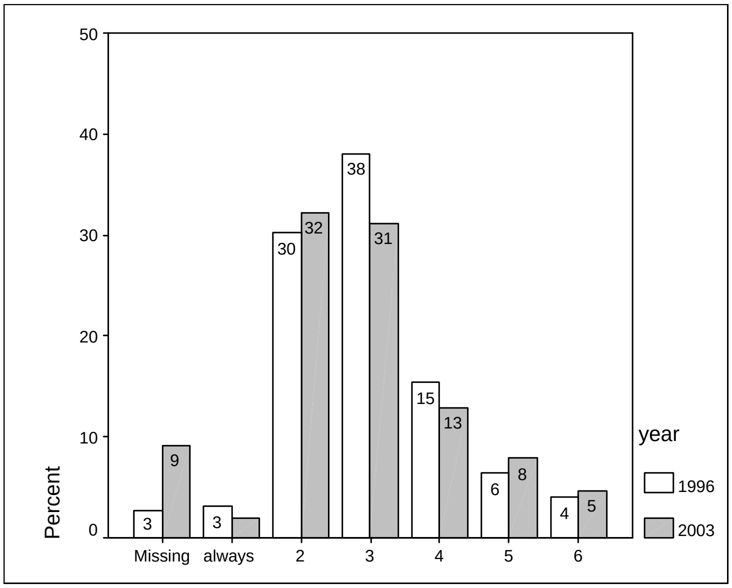
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
How often do you think policy makers draw on the most current and state-of-the-art knowledge of the climate sciences	1996	539	4.62	1.316	.057
	2003	522	4.66	1.297	.057

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
How often do you think policy makers draw on the most current and state-of-the-art knowledge of the climate sciences	Equal variances assumed	.003	.958	-.466	1059	.641	-.04	.080	-.195	.120
	Equal variances not assumed			-.466	1058.676	.641	-.04	.080	-.195	.120

Figure 58. How often do you think that experts frame problems so that the solution fits his or her area of expertise?



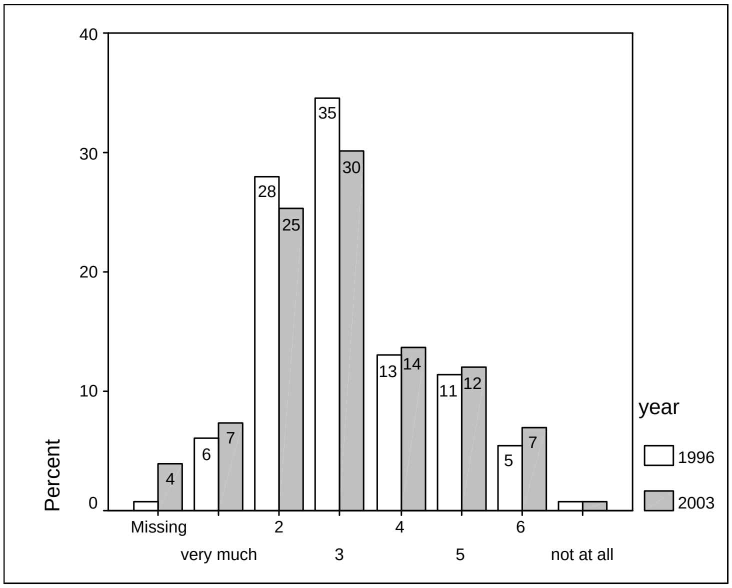
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
How often do you think that experts frame problems so that the solution fits his or her area of expertise	1996	531	3.04	1.111	.048
	2003	507	3.07	1.179	.052

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
How often do you think that experts frame problems so that the solution fits his or her area of expertise	Equal variances assumed	3.737	.053	-.443	1036	.658	-.03	.071	-.171	.108
	Equal variances not assumed			-.442	1024.572	.659	-.03	.071	-.171	.108

Figure 59. How much do you feel that scientists have played a role in transforming the climate issue from being a scientific issue to a social and public issue?



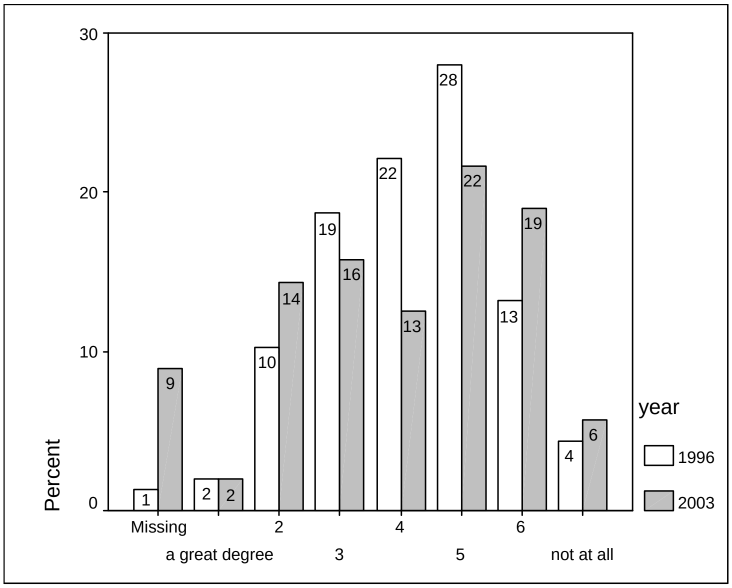
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
How much do you feel that scientists have played a role in transforming the climate issue from being a scientific issue to a social and public issue	1996	542	3.15	1.308	.056
	2003	536	3.22	1.392	.060

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
How much do you feel that scientists have played a role in transforming the climate issue from being a scientific issue to a social and public issue	Equal variances assumed	4.586	.032	-.882	1076	.378	-.07	.082	-.234	.089
	Equal variances not assumed			-.882	1070.218	.378	-.07	.082	-.234	.089

Figure 60. To what degree do you think climate science has remained a value-neutral science?



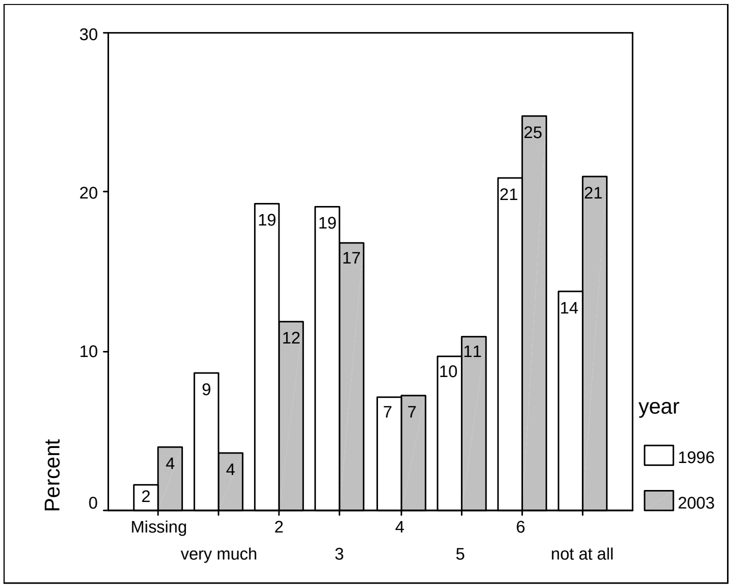
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
To what degree do you think climate science has remained a value-neutral science	1996	539	4.23	1.400	.060
	2003	508	4.29	1.599	.071

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
To what degree do you think climate science has remained a value-neutral science	Equal variances assumed	22.889	.000	-.701	1045	.484	-.06	.093	-.247	.117
	Equal variances not assumed			-.698	1008.175	.485	-.06	.093	-.248	.118

Figure 61. Some scientists present the extremes of the climate debate in a popular format with the claim that it is their task to alert the public. How much do you agree with this practice?



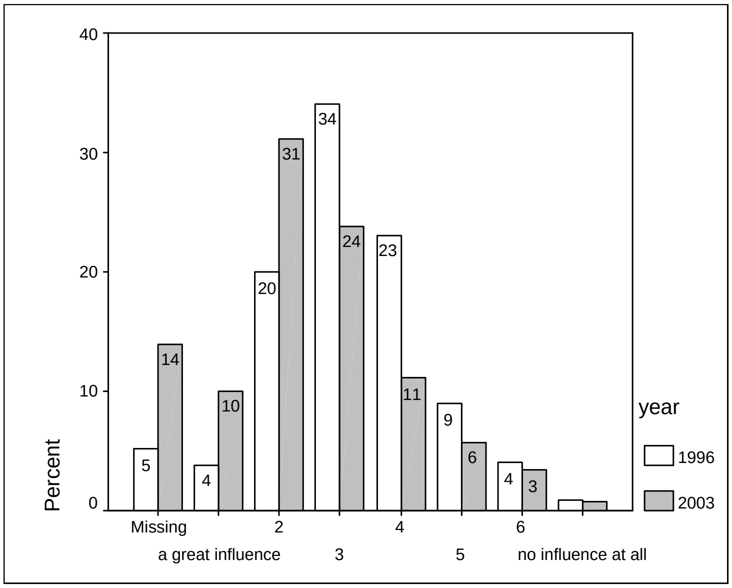
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
Some scientists present the extremes of the climate debate in a popular format with the claim that it is their task to alert the public. How much do you agree with this practice	1996	537	4.09	1.992	.086
	2003	536	4.75	1.886	.081

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Some scientists present the extremes of the climate debate in a popular format with the claim that it is their task to alert the public. How much do you agree with this practice	Equal variances assumed	5.011	.025	-5.532	1071	.000	-.66	.118	-.887	-.423
	Equal variances not assumed			-5.532	1068.031	.000	-.66	.118	-.887	-.423

Figure 62. How much influence do you think the IPCC has over what areas come to be considered worthy research topics?



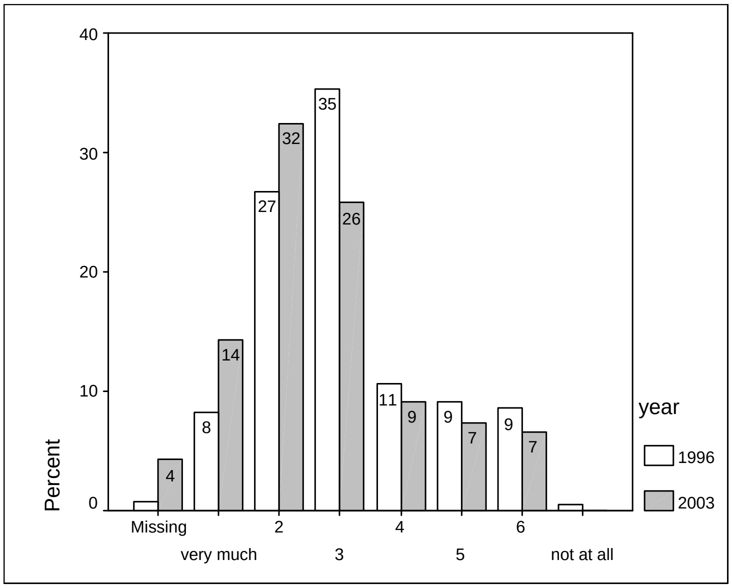
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
How much influence do you think the IPCC has over what areas come to be considered worthy research topics	1996	518	3.31	1.200	.053
	2003	480	2.82	1.298	.059

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
How much influence do you think the IPCC has over what areas come to be considered worthy research topics	Equal variances assumed	1.566	.211	6.174	996	.000	.49	.079	.333	.643
	Equal variances not assumed			6.156	972.734	.000	.49	.079	.333	.644

Figure 63. How much do you think the direction of research in the climate sciences has been influenced by external politics?



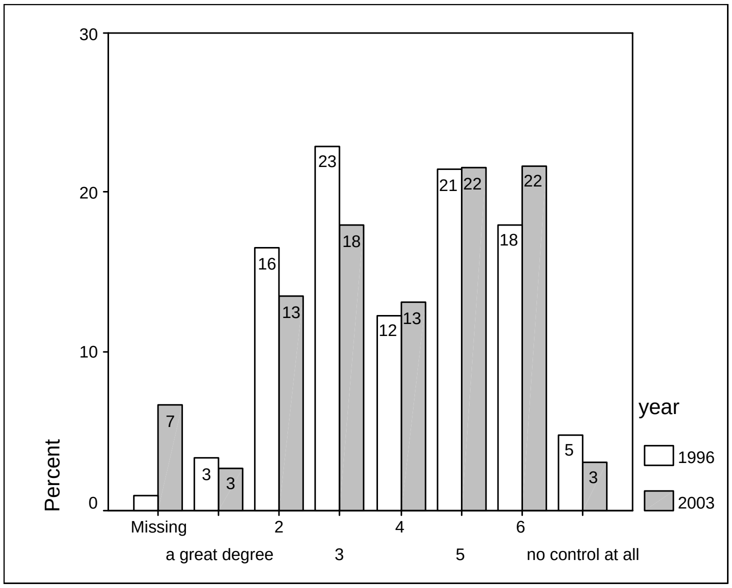
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
How much do you think the direction of research in the climate sciences has been influenced by external politics	1996	542	3.14	1.390	.060
	2003	534	2.82	1.391	.060

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
How much do you think the direction of research in the climate sciences has been influenced by external politics	Equal variances assumed	.379	.538	3.775	1074	.000	.32	.085	.154	.486
	Equal variances not assumed			3.775	1073.727	.000	.32	.085	.154	.486

Figure 64. To what degree do you think climate scientists have control over what information gets transferred to the policy makers?



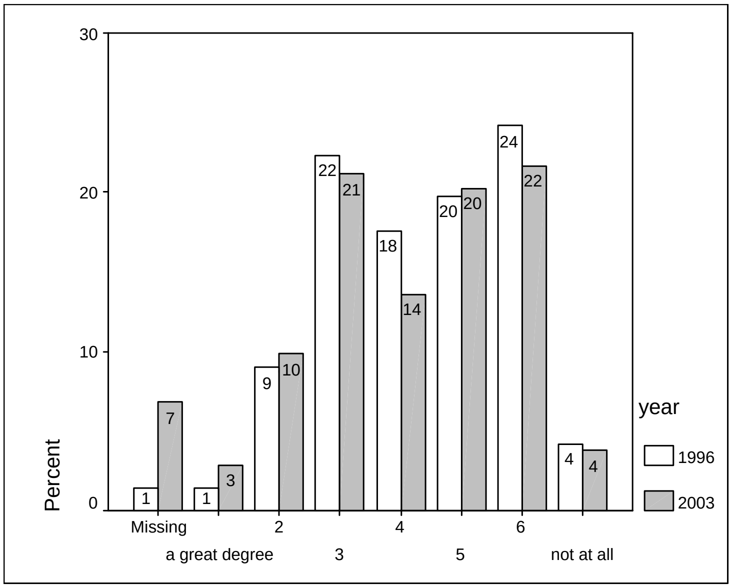
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
To what degree do you think climate scientists have control over what information gets transferred to the policy makers	1996	541	4.06	1.603	.069
	2003	521	4.23	1.560	.068

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
To what degree do you think climate scientists have control over what information gets transferred to the policy makers	Equal variances assumed	.442	.506	-1.723	1060	.085	-.17	.097	-.358	.023
	Equal variances not assumed			-1.724	1059.889	.085	-.17	.097	-.358	.023

Figure 65. To what degree do you think policy makers are influential in causing scientists to redefine their perceptions of an issue?



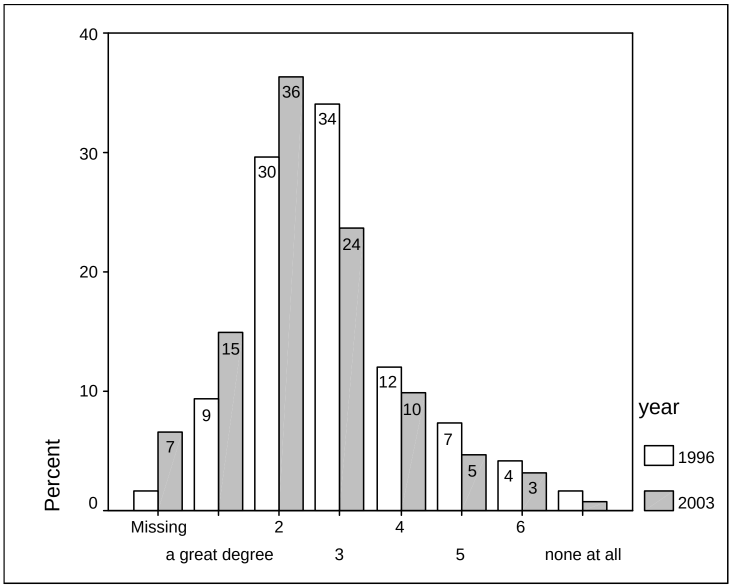
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
To what degree do you think policy makers are influential in causing scientists to redefine their perceptions of an issue	1996	538	4.37	1.470	.063
	2003	520	4.27	1.539	.067

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
To what degree do you think policy makers are influential in causing scientists to redefine their perceptions of an issue	Equal variances assumed	1.665	.197	1.006	1056	.315	.09	.093	-.088	.275
	Equal variances not assumed			1.005	1049.344	.315	.09	.093	-.089	.275

Figure 66. To what degree do you think there is growing pressure for climate research to be justified in terms of policy relevance?



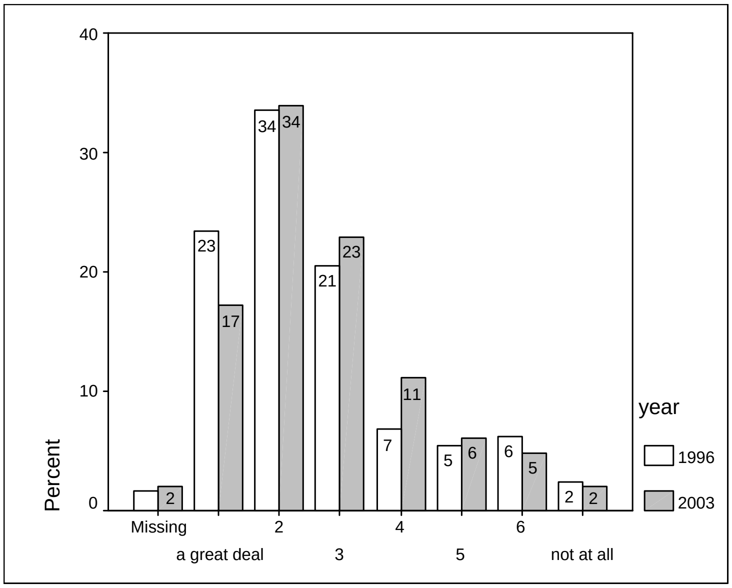
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
To what degree do you think there is growing pressure for climate research to be justified in terms of policy relevance	1996	537	2.98	1.326	.057
	2003	521	2.63	1.278	.056

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
To what degree do you think there is growing pressure for climate research to be justified in terms of policy relevance	Equal variances assumed	.843	.359	4.298	1056	.000	.34	.080	.187	.501
	Equal variances not assumed			4.301	1055.952	.000	.34	.080	.187	.501

Figure 67. How much do you think climate scientists should be involved in alerting the general public to the possible social consequences arising from changes in the climate?



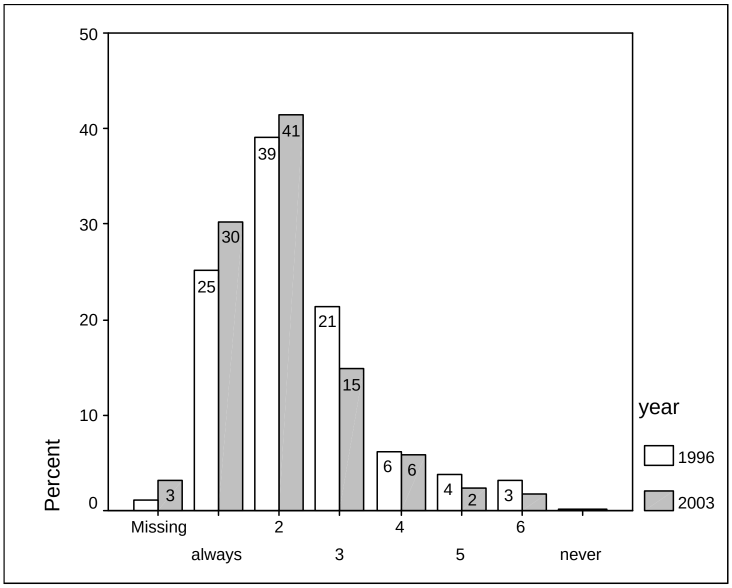
Group Statistics

	year	N	Mean	Std. Deviation	Std. Error Mean
How much do you think climate scientists should be involved in alerting the general public to the possible social consequences arising from changes in the climate	1996	537	2.65	1.557	.067
	2003	547	2.77	1.458	.062

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
How much do you think climate scientists should be involved in alerting the general public to the possible social consequences arising from changes in the climate	Equal variances assumed	1.860	.173	-1.307	1082	.191	-.12	.092	-.300	.060
	Equal variances not assumed			-1.306	1074.384	.192	-.12	.092	-.300	.060

Figure 68. How often do you think the members of the general public are being given only part of the picture?



Group Statistics

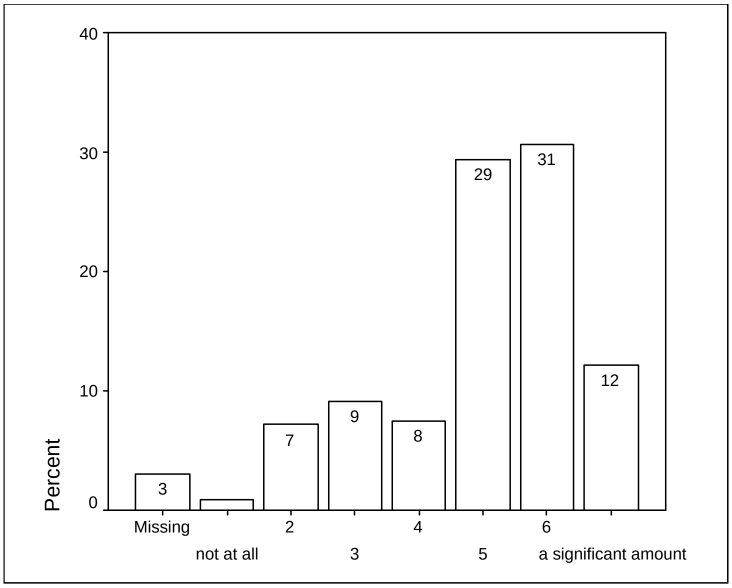
	year	N	Mean	Std. Deviation	Std. Error Mean
How often do you think the members of the general public are being given only part of the picture?	1996	540	2.34	1.228	.053
	2003	540	2.12	1.122	.048

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
How often do you think the members of the general public are being given only part of the picture?	Equal variances assumed	9.631	.002	3.104	1078	.002	.22	.072	.082	.363
	Equal variances not assumed			3.104	1069.257	.002	.22	.072	.082	.363

The following questions were asked only in the 2003 survey

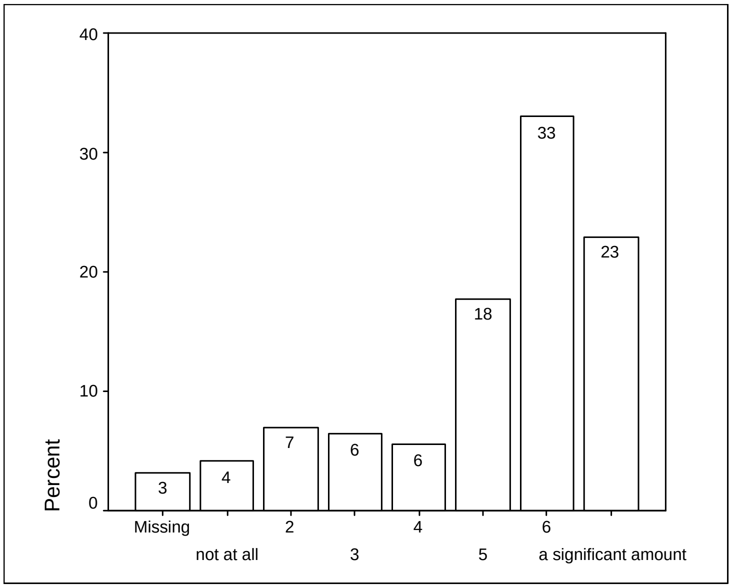
Figure 69. How much has climate science advanced in the understanding of climate change in the last 5 years?



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
How much has climate science advanced in the understanding of climate change in the last 5 years?	541	5.04	.06	1.445	2.089
Valid N (listwise)	541				

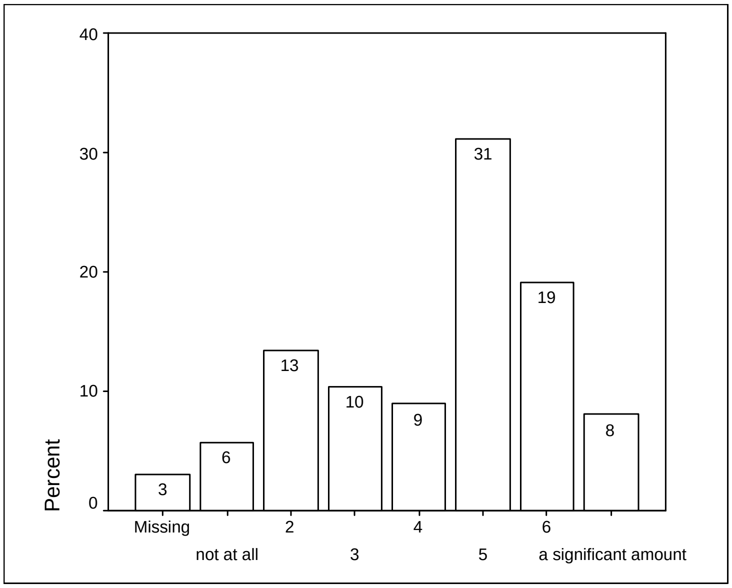
Figure 70. How much does new scientific discovery in the last decade confirm the anthropogenic influence on climate?



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
How much does new scientific discovery in the last decade confirm the anthropogenic influence on climate	540	5.24	.07	1.701	2.894
Valid N (listwise)	540				

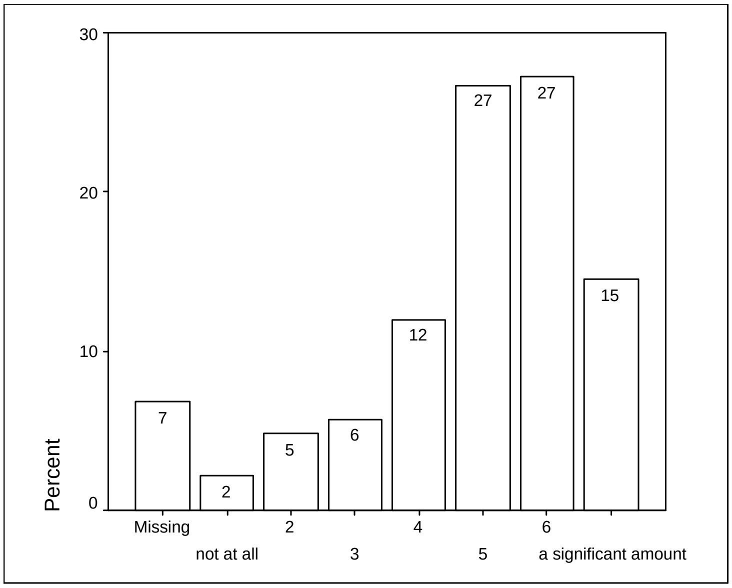
Figure 71. How much has the uncertainty regarding climate change been reduced in the last ten years?



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
How much has the uncertainty regarding climate change been reduced in the last ten years	541	4.40	.07	1.702	2.897
Valid N (listwise)	541				

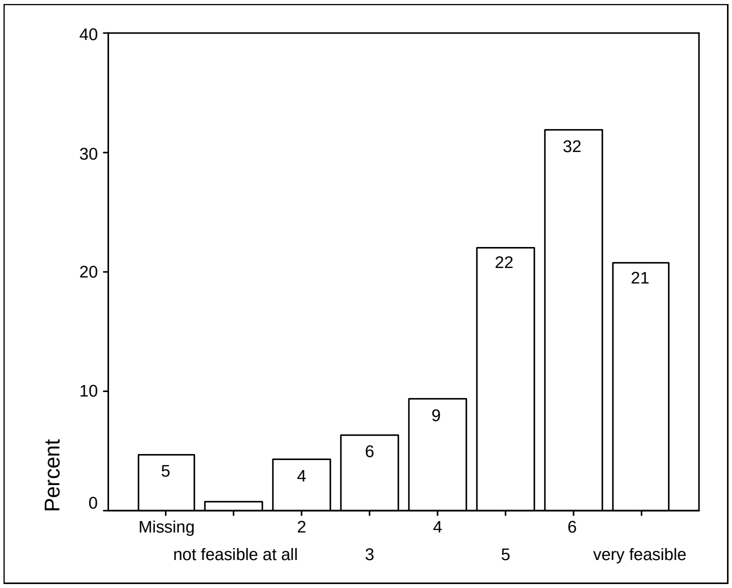
Figure 72. Are we beginning to experience the effects of climate change?



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
Are we beginning to experience the effects of climate change	520	5.10	.06	1.456	2.120
Valid N (listwise)	520				

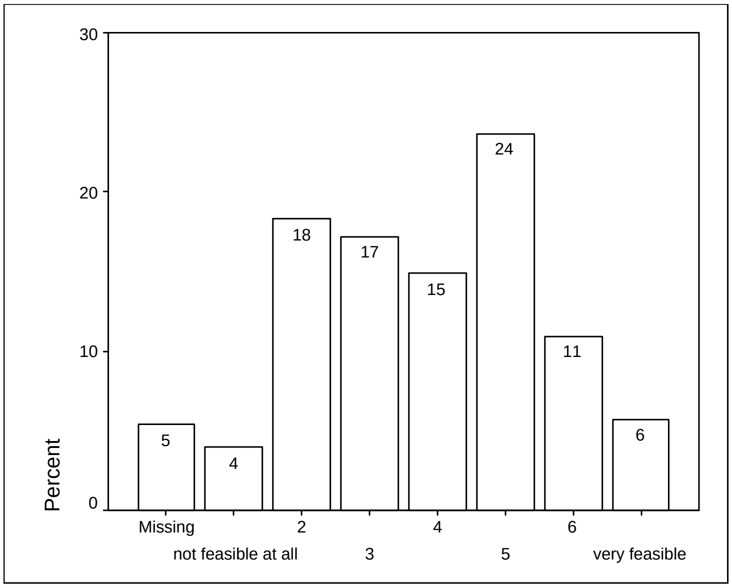
Figure 73. How feasible is adaptation to climate change an option for the society in which you live?



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
How feasible is adaptation to climate change an option for the society in which you live	532	5.38	.06	1.399	1.956
Valid N (listwise)	532				

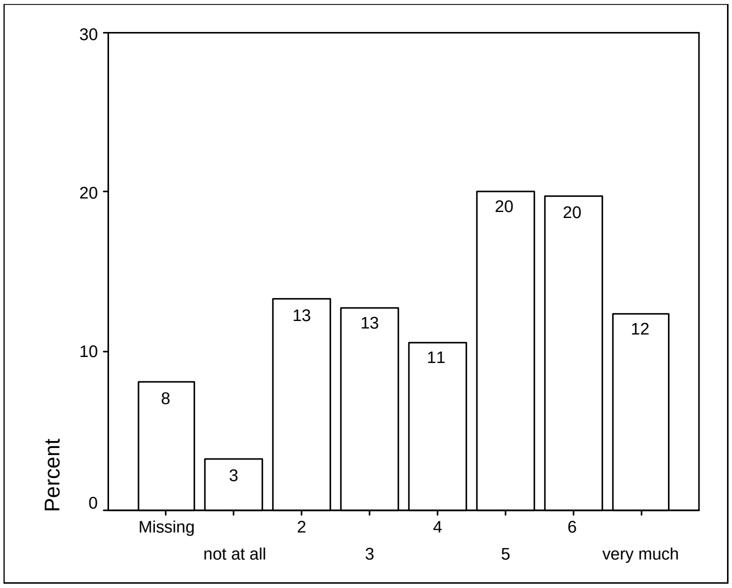
Figure 74. How feasible is adaptation as a global option?



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
How feasible is adaptation as a global option	528	3.97	.07	1.610	2.591
Valid N (listwise)	528				

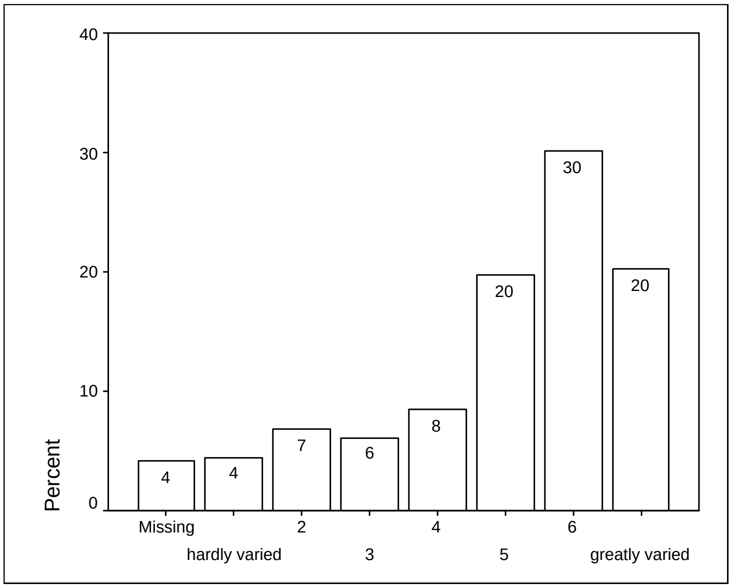
Figure 75. To what degree is mitigation still an option?



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
To what degree is mitigation still an option	513	4.52	.08	1.748	3.055
Valid N (listwise)	513				

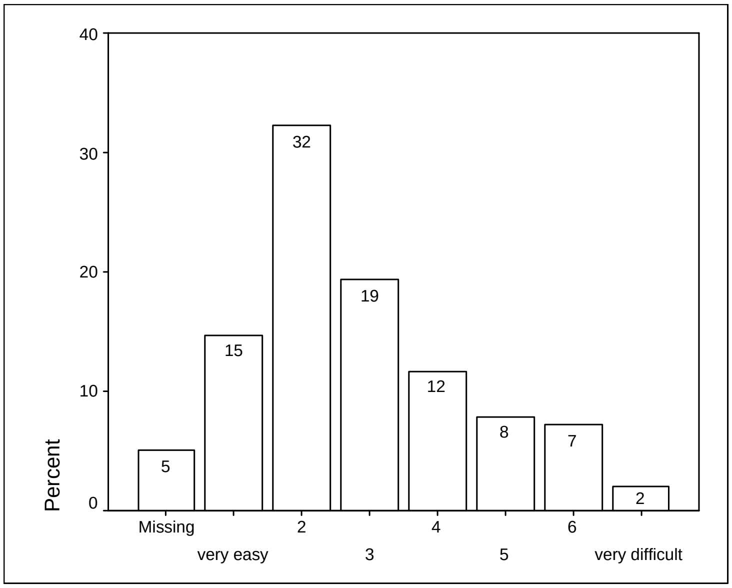
Figure 76. The region in which you live could be defined as having a pattern of seasonal change that is



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
The region in which you live could be defined as having a pattern of seasonal change that is	535	5.12	.07	1.697	2.878
Valid N (listwise)	535				

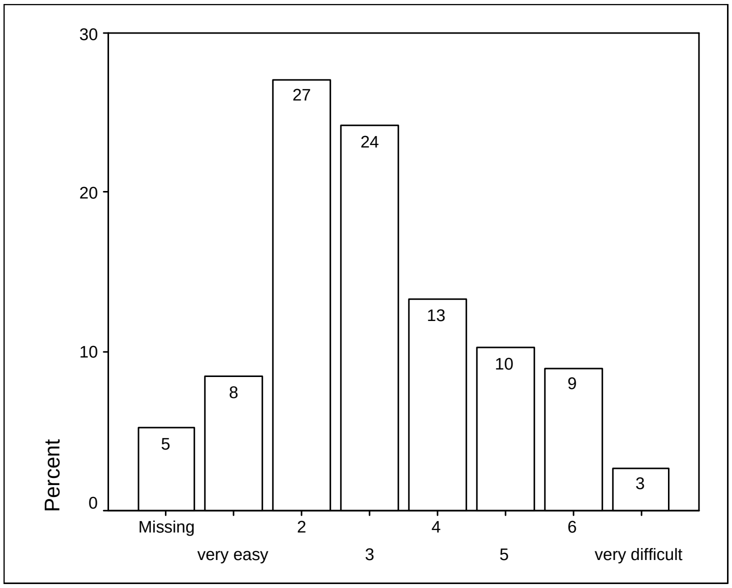
Figure 77. How easy would it be for the general daily routine of the people who live in your local region to adapt to climate change?



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
Ease of adaptability: The general daily routine of the people who live in your local region	530	2.95	.07	1.558	2.427
Valid N (listwise)	530				

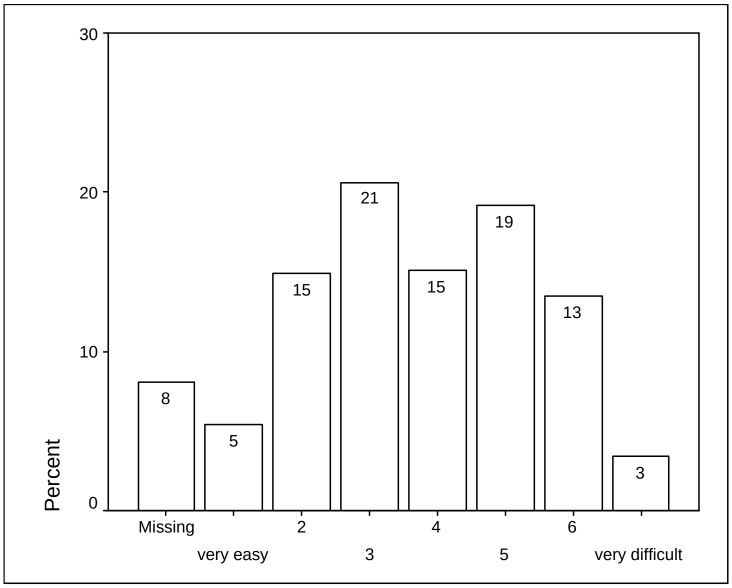
Figure 78. How easy would it be for the general daily routine of the people who live in your nation to adapt to climate change?



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
Ease of adaptability: The general daily routine of the people who live in your nation	529	3.29	.07	1.561	2.437
Valid N (listwise)	529				

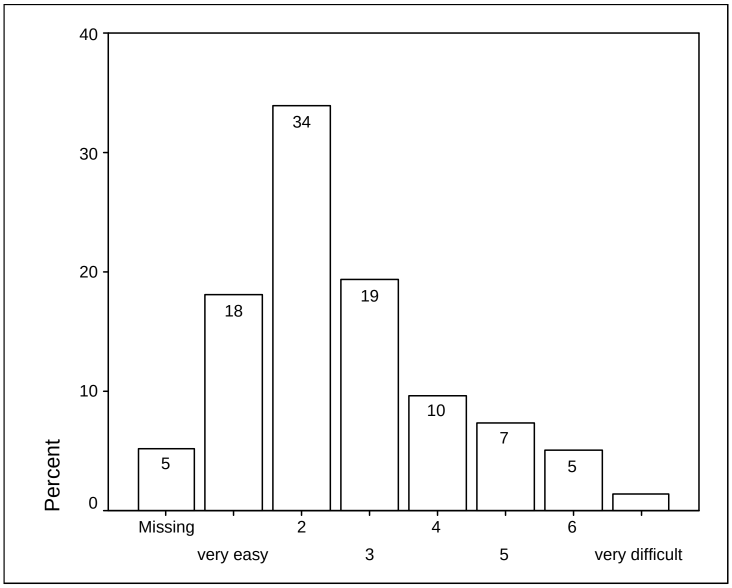
Figure 79. How easy would it be for agriculture in your region to adapt to climate change?



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
Ease of adaptability: Agriculture in your region	513	3.89	.07	1.586	2.517
Valid N (listwise)	513				

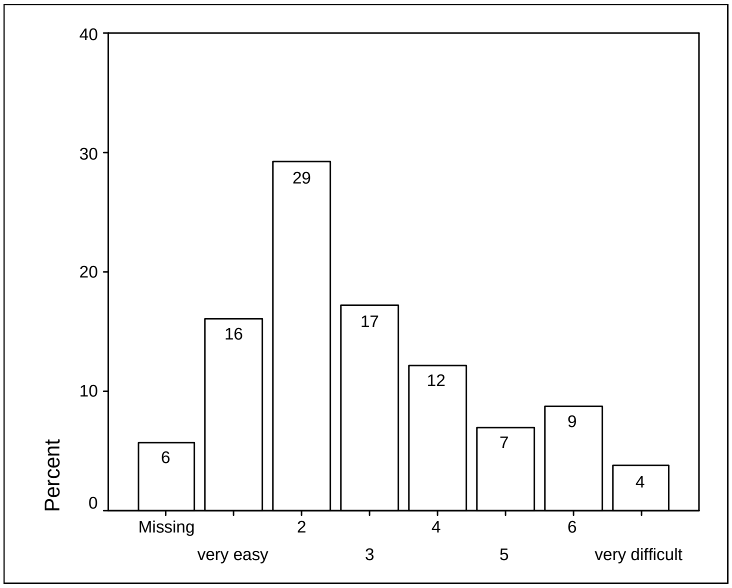
Figure 80. How easy would it be for the housing design in your region to adapt to climate change?



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
Ease of adaptability: Housing design in your region	529	2.74	.06	1.479	2.187
Valid N (listwise)	529				

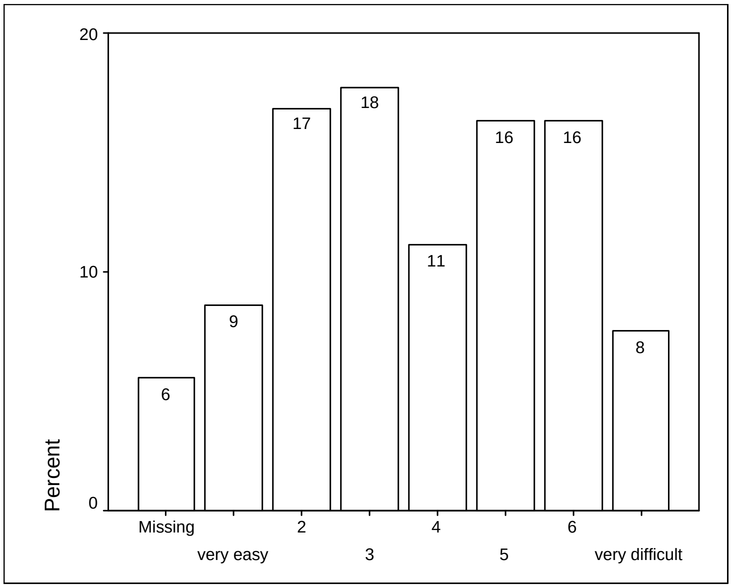
Figure 81. How easy would it be for transportation in your region to adapt to climate change?



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
Ease of adaptability: Transportation in your region	526	3.06	.07	1.703	2.899
Valid N (listwise)	526				

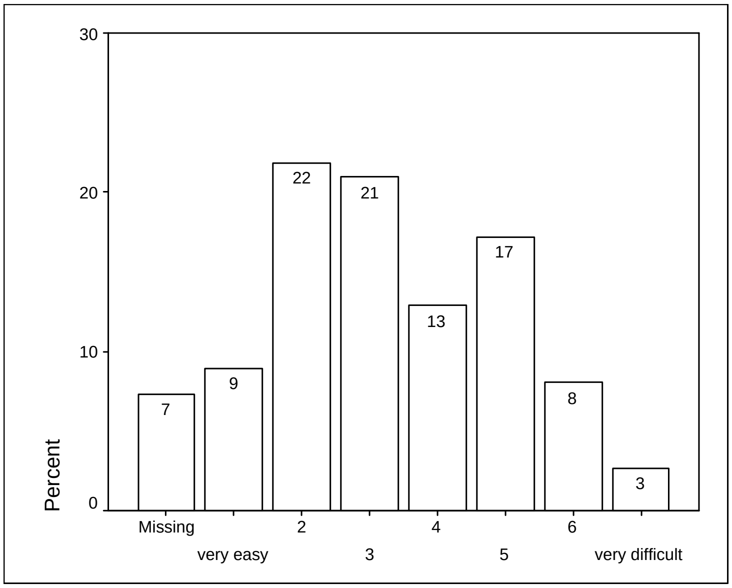
Figure 82. How easy would it be for public water utilities in your region to adapt to climate change?



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
Ease of adaptability: Public utilities in your region: water	527	3.94	.08	1.818	3.304
Valid N (listwise)	527				

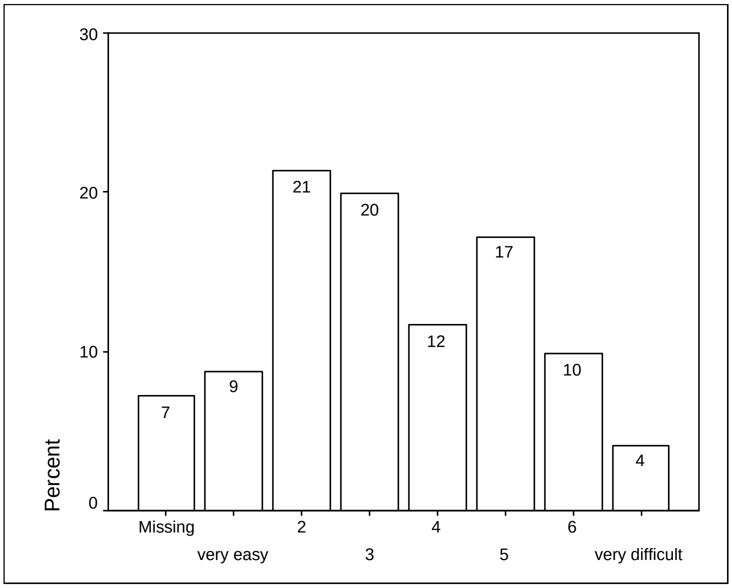
Figure 83. How easy would it be for the public utilities of natural gas or heating and air conditioning fuels in your region to adapt to climate change?



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
Ease of adaptability: Public utilities in your region: natural gas, heating/air conditioning fuel	517	3.46	.07	1.596	2.547
Valid N (listwise)	517				

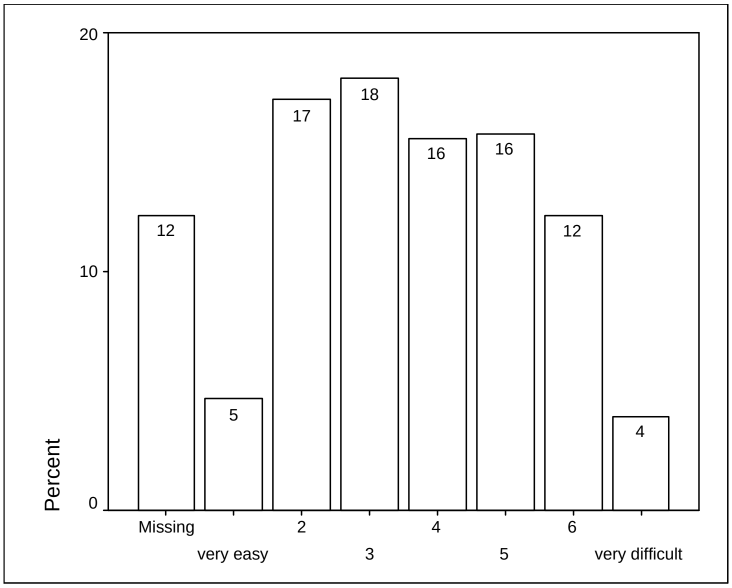
Figure 84. How easy would it be for public utility electricity in your region to adapt to climate change?



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
Ease of adaptability: Public utilities in your region: electricity	518	3.57	.07	1.679	2.818
Valid N (listwise)	518				

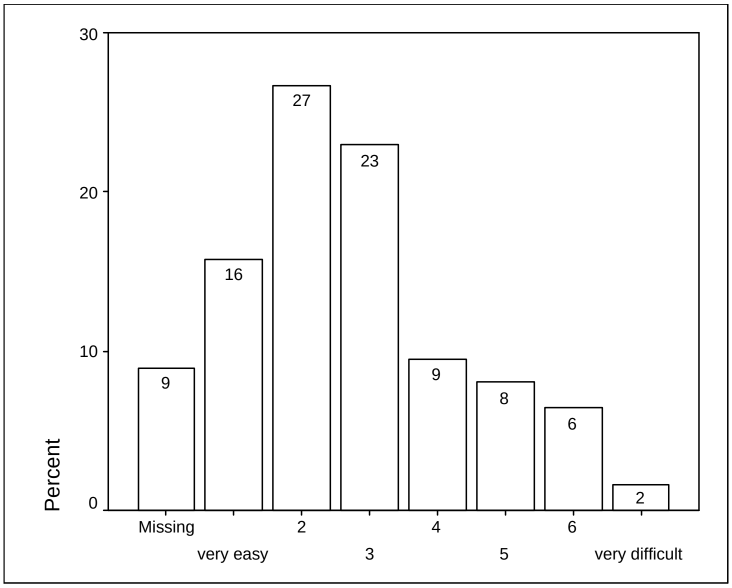
Figure 85. How easy would it be for forestry in your nation to adapt to climate change?



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
Ease of adaptability: Forestry in your nation	489	3.84	.07	1.612	2.599
Valid N (listwise)	489				

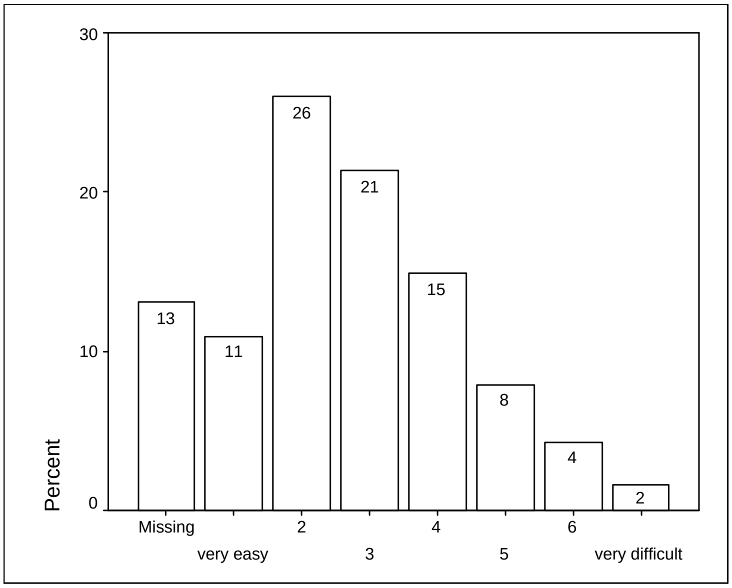
Figure 86. How easy would it be for tourism in your nation to adapt to climate change?



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
Ease of adaptability: Tourism in your nation	508	2.93	.07	1.538	2.365
Valid N (listwise)	508				

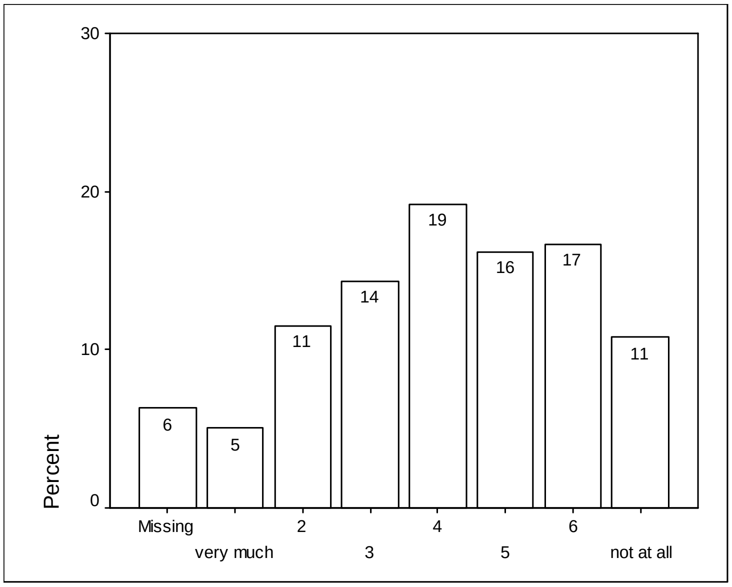
Figure 87. How easy would it be for manufacturing in your nation to adapt to climate change?



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
Ease of adaptability: Manufacturing in your nation	485	3.02	.07	1.443	2.082
Valid N (listwise)	485				

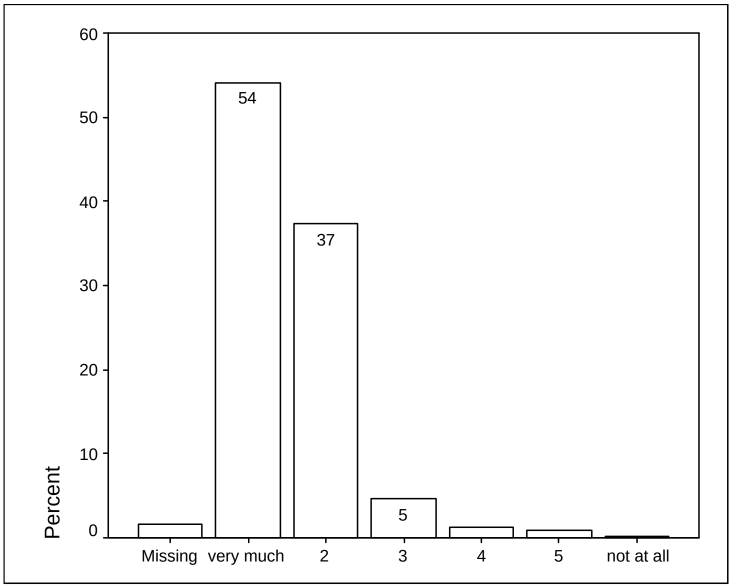
Figure 88. How much would you agree that future research efforts and funding should focus more on adaptation and less on detection.



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
How much would you agree that future research efforts and funding should focus more on adaptation and less on detection	523	4.31	.08	1.723	2.968
Valid N (listwise)	523				

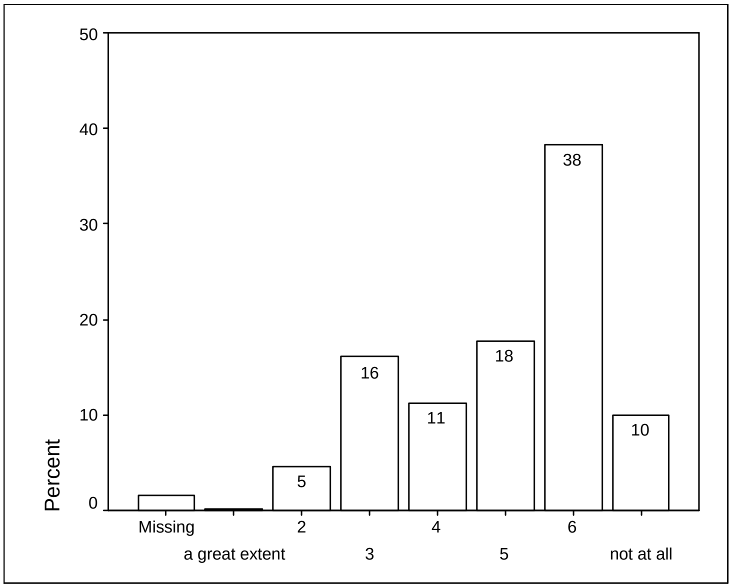
Figure 89. How much do you think the media influences the public perception of climate change?



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
How much do you think the media influences the public perception of climate change	549	1.56	.03	.763	.583
Valid N (listwise)	549				

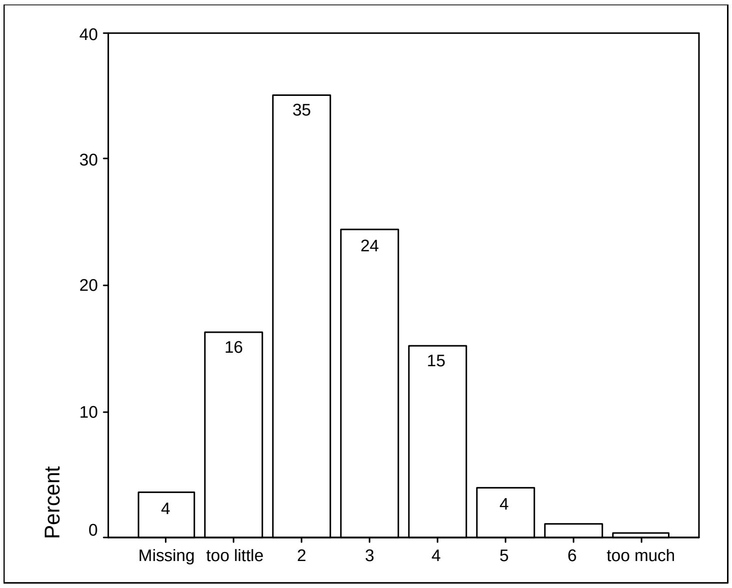
Figure 90. To what extent do you think that the media provides the public with adequate information to understand the basics of climate change?



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
To what extent do you think that the media provides the public with adequate information to understand the basics of climate change	549	5.00	.06	1.424	2.027
Valid N (listwise)	549				

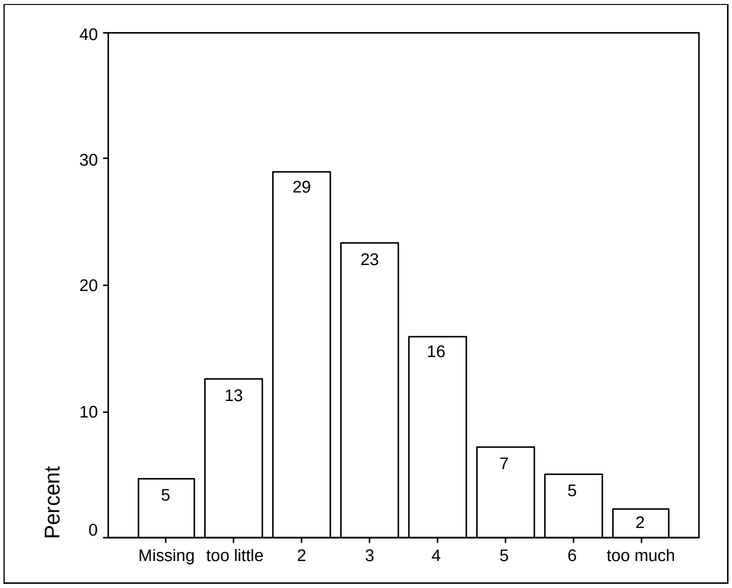
Figure 91. The media provides too much coverage, about the right amount of coverage (middle of the scale) or too little coverage of the most current state of the art knowledge of the climate sciences.



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
Media coverage: The most current state of the art knowledge of the climate sciences	538	2.59	.05	1.163	1.353
Valid N (listwise)	538				

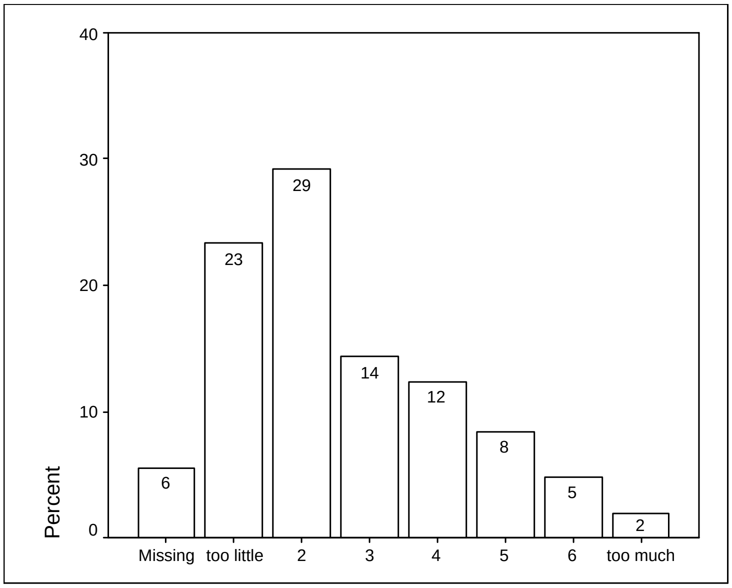
Figure 92. The media provides too much coverage, about the right amount of coverage (middle of the scale) or too little coverage of the likely effects of climate change on the society in which you live.



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
Media coverage: The likely effects of climate change on the society in which you live	532	3.01	.06	1.472	2.168
Valid N (listwise)	532				

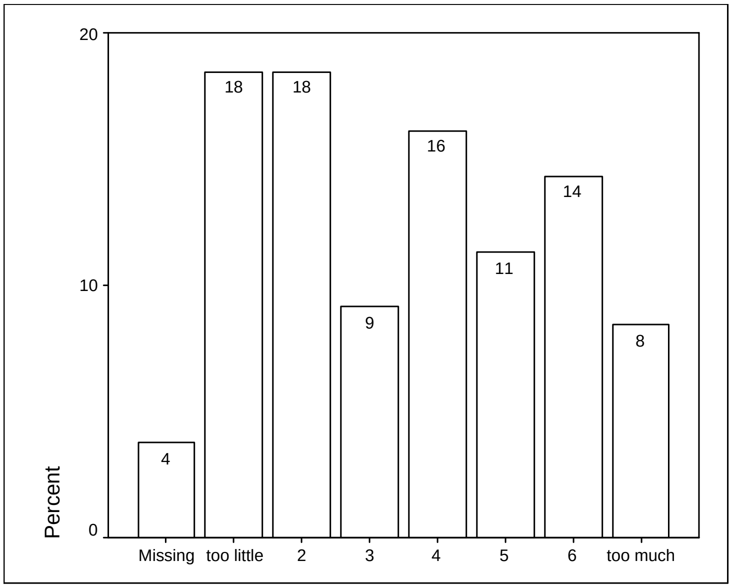
Figure 93. The media provides too much coverage, about the right amount of coverage (middle of the scale) or too little coverage of the likely effects of climate change in other societies.



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
Media coverage: The likely effects of climate change in other societies	527	2.74	.07	1.587	2.518
Valid N (listwise)	527				

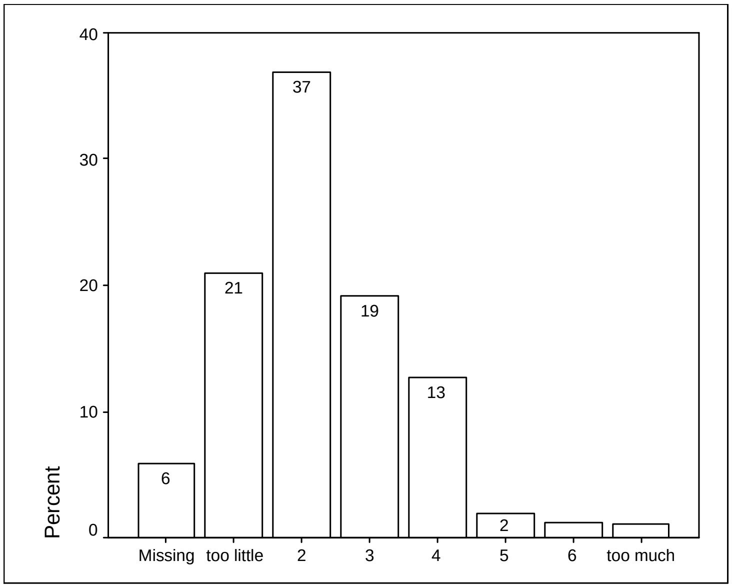
Figure 94. The media provides too much coverage, about the right amount of coverage (middle of the scale) or too little coverage of the conflicting findings or conclusions reached by climate scientists.



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
Media coverage: Conflicting findings or conclusions reached by climate scientists	537	3.62	.09	1.989	3.955
Valid N (listwise)	537				

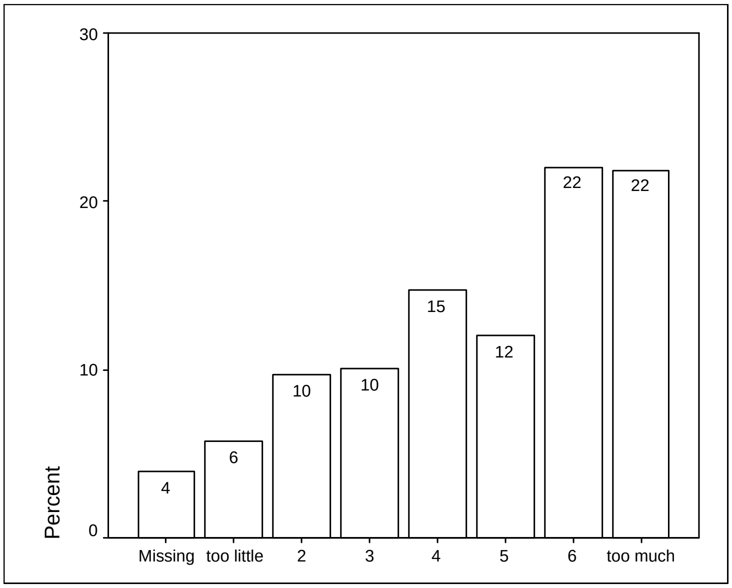
Figure 95. The media provides too much coverage, about the right amount of coverage (middle of the scale) or too little coverage of the changes that would be necessary to adapt to climate change in their region.



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
Media coverage: The changes that would be necessary to adapt to climate change in their region	525	2.42	.05	1.216	1.478
Valid N (listwise)	525				

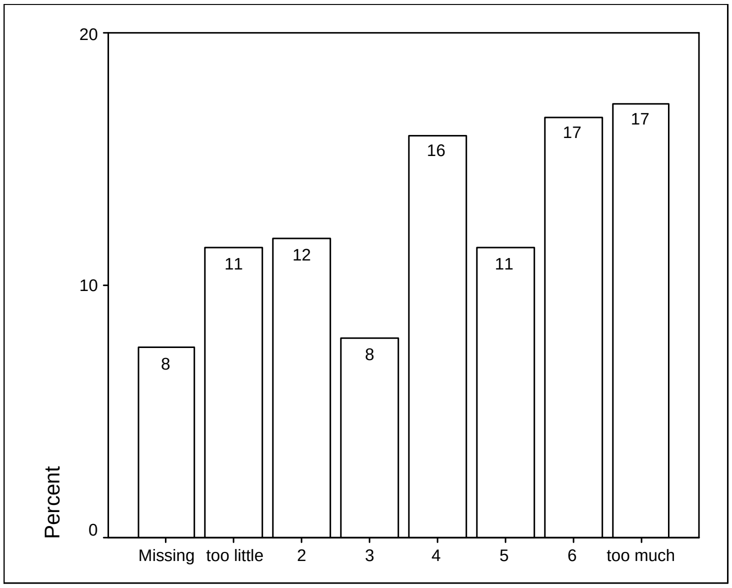
Figure 96. The media provides too much coverage, about the right amount of coverage (middle of the scale) or too little coverage of the worst case scenarios of climate change.



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
Media coverage: The worst case scenarios of climate change	536	4.78	.08	1.879	3.532
Valid N (listwise)	536				

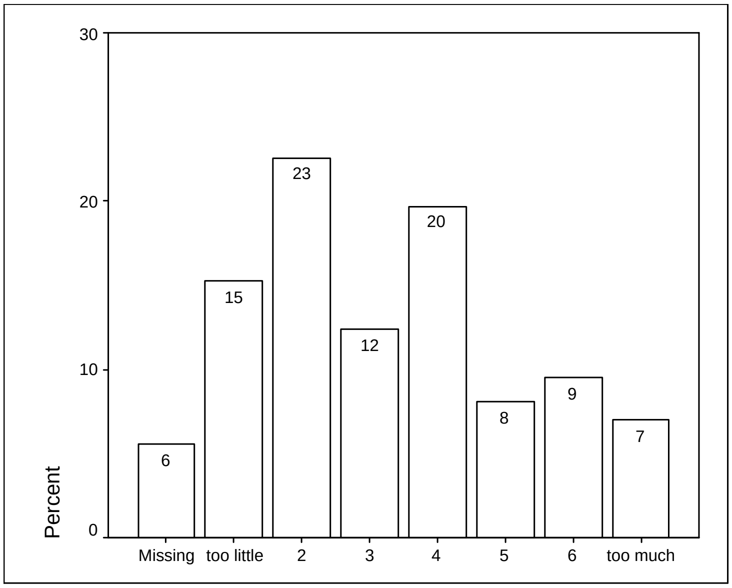
Figure 97. The media provides too much coverage, about the right amount of coverage (middle of the scale) or too little coverage of the claims of skeptical scientists who dispute the IPCC consensus.



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
Media coverage: The claims of sceptical scientists who dispute the IPCC consensus	516	4.33	.09	2.033	4.132
Valid N (listwise)	516				

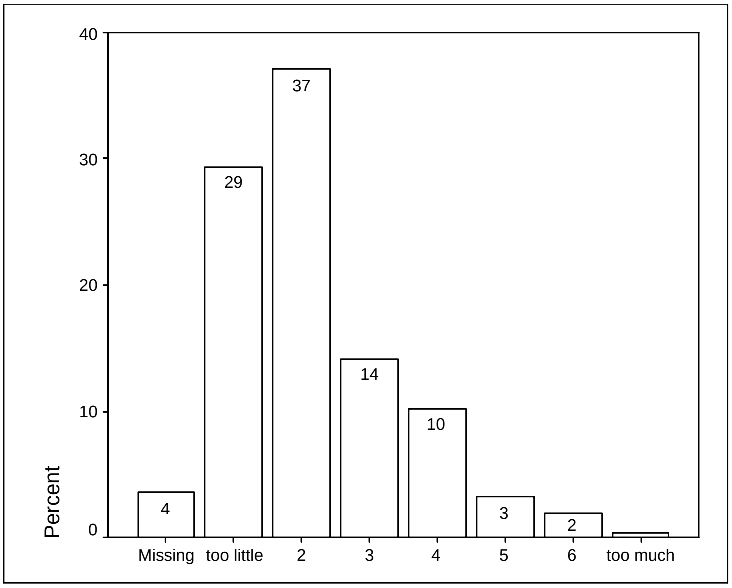
Figure 98. The media provides too much coverage, about the right amount of coverage (middle of the scale) or too little coverage of the possible costs of implementing the Kyoto Accords.



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
Media coverage: The possible costs of implementing the Kyoto Accords	527	3.42	.08	1.832	3.357
Valid N (listwise)	527				

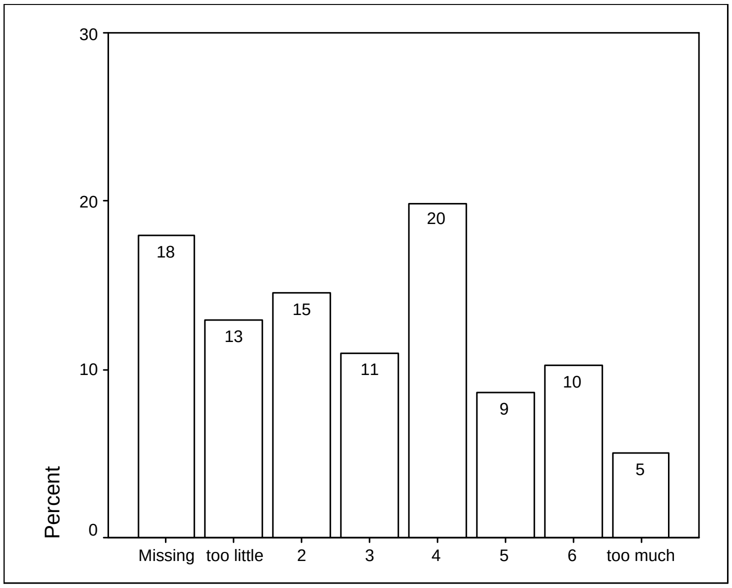
Figure 99. The media provides too much coverage, about the right amount of coverage (middle of the scale) or too little coverage of the gains that might be made through energy efficiency.



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
Media coverage: The gains that might be made through energy efficiency	538	2.25	.05	1.239	1.535
Valid N (listwise)	538				

Figure 100. The media provides too much coverage, about the right amount of coverage (middle of the scale) or too little coverage of the *personal* differences among claims-makers who differ about the reality of climate change.



Descriptive Statistics

	N	Mean		Std.	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
Media coverage: Personal differences among claims-makers who differ about the reality of climate change	458	3.58	.08	1.799	3.238
Valid N (listwise)	458				