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## **Between Hype and Decline: Recent Trends in Public Perception of Climate Change**

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### **Abstract**

Several surveys around the world claim that the issue of climate change is of declining interest among the population. Hamburg, regularly experiencing storm surges and suffered a major flood in 1962, shows evidence of this tendency in yearly surveys undertaken from 2008 to 2011. Comparing detected trends in public awareness of climate change around the western world, this paper concludes that there is a decline in public concern about climate change in the last few years. A few surveys in the US reaching back to the 1990s indicate that this decline may be intermittent; data suggest that the long-term increase in scientific confidence and in media coverage is not transferred in a parallel long-term increase in public concern about climate change.

*Keywords:* risk perception, decline, climate change, global warming, Hamburg survey

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## 1. Introduction

In June 2010, J.A. Krosnick published an editorial in the New York Times on the awareness of American citizens of climate change. In his article “The Climate Majority”, Krosnick contests the commonly held view that American awareness and perception of climate change had declined in recent years. Krosnick argues the opposite is true, with the vast majority still believing that the earth has been gradually warming, and suggests the fault lies with pollsters and their propensity of comparing apples and oranges. This article stimulated considerable debate. Declining awareness of climate change obviously is an issue. Krosnick concedes as well that people are now less concerned about climate change (Stanford University, 2010). He puts this down to the recent experience of cooler weather and expects the trend to reverse as soon as temperatures begin to rise again (Krosnick, 2010). How should this discussion be interpreted?

The Institute of Coastal Research at the Helmholtz-Zentrum Geesthacht in Germany is engaged in a long-term study of awareness of climate change and its impacts among Hamburg citizens. From 2008 onwards, a representative annual telephone survey has been conducted to establish how residents perceive and rate the threat of climate change to their city and to their personal life.

In this contribution, we first report about the results of these annual surveys among citizens in Hamburg, 2008-2011 (Section 2), and then screen the literature if similar changes are found in other countries of the world in recent years (Section 3). Obviously, the interpretation of the recent change in the worldwide attention, in Hamburg and elsewhere, is hampered by the shortness of the considered time window of a few years. For the US, longer series exist, and a comparison of the short segments with these 20 years records suggests that the recent change may be more of an intermittent downturn during a series of attention cycles (Section 4)(for further meta-comparison of US-survey data see Nisbet and Myers, 2007). In the concluding, we speculate about the drivers being the changing attention in media coverage and confidence among scientists about our knowledge of climate change.

## **2. Public awareness of climate change in Hamburg**

The key question is in our surveys (for methods and detailed outcomes see supplementary information) how serious people feel the threat is that climate change poses to Hamburg. In 2008, 17% of respondents considered climate change a very serious threat; this figure dropped to 9% in 2011 (Figure 1). There was no significant difference between male and female respondents. The groups voicing the greatest concern were those between 30 and 59 years old. The combination of the categories “very serious” and “serious” threat gave 63% in 2008, which means that more than half of the population considered climate change a serious threat to the city of Hamburg. This figure dropped to 44% in 2011. At the same time the number of those considering climate change no problem at all has gone up to 12% in 2010 and 9% in 2011 from an initial 6%. Note that the largest changes were from 2008 to 2009, not during 2009 and 2010, when several events (“ClimateGate”, critique of IPCC, failure of COP15) caused enhanced attention (Figure 4), with partly negative connotation.

**About here:**

**Figure 1 Potential impact of climate change in Hamburg, Hamburg survey 2008-2011.**

Those considering climate change a threat to Hamburg, were asked in which time frame they expect climate change to be truly felt in Hamburg. Whilst in 2008, the impact of climate change was seen as an immediate threat by 44% of the respondents, the percentage dropped to 30% in 2010, levelling off at 36% in 2011 (Figure 2).

**About here:**

**Figure 2 Time range by which climate change is expected to impact on Hamburg, Hamburg survey 2008-2011.**

What are the expected hazards due to climate change in Hamburg? The next question offered four possible threats to the city of Hamburg that could arise from climate change, namely: storm surges, storms, torrential rain and heat waves.

Respondents consider storm surges to be the most serious threat to the city. This is not surprising, given that Hamburg is located 110 km up the river Elbe and thus directly linked to the North Sea and therefore tides as well as storm surges. Indeed storm surges have been part of the hazard history of the city. The last devastating storm surge with significant loss of life and damages occurred in 1962 when more than 300 people died and about 25.000 had to be evacuated from the flooded areas. Since then coastal protection against storm surges was intensified, so that after 1962 no significant losses took place (von Storch et al., 2008). However, the collective memory of the storm surge in 1962 is still vivid (Ratter and Kruse, 2010).

The result concerning storm surges in Hamburg has remained fairly constant over the four-year survey period, with 81% to 84% of those considering climate change a threat giving this answer throughout. Storms, torrential rains and heat waves played only a minor role in people's perception. They vary between 8 and 9% (for storms), 2 and 5% (for torrential rains) and 2 and 4% (for heat waves) throughout the period of investigation.

The decline in public concern about the effect of future climate change is not easily explained. As stated by Spence et al. (2011, p. 46) "...psychological research indicates that one reason for a lack of concern about climate change may be the perception that it is a distant issue." It has also been suggested that the lack of personal experience with climate impacts is problematic (Weber, 2010).

In Hamburg, there might be similar reasons why people feel that climate change is less of an issue. To obtain better insight into people's wider concerns about their city, the 2010 and 2011 surveys preceded the climate-related questions with the open question "What, in your opinion, are the three most important problems Hamburg is currently faced with?" Climate change did not feature at all, meaning it does not appear to be a real issue for Hamburg citizens in general. The answers show that day-to-day issues such as education policy, traffic problems or economic and financial issues are of much more immediate concern to people in Hamburg than climate change.

### 3. Climate change perception around the (western) world

According to the Hamburg survey, there obviously is a recent decline in concern about climate change and its impacts. Two questions arise – one, is this specific to Hamburg or are similar recent declines reported from other parts of the world, and second, is this part of a longer-term pattern? The second question, we will deal with in section 4; here we have screened the literature for surveys in other parts of the world. We used accessible climate change surveys, whenever the original data set (i.e. the wording of the questions etc.) were available,

The following gives an overview of recently published awareness studies in different Western countries. The wordings of the questions are listed in the supplementary information.

- **Great Britain:** In 2010, BBC News headlined “Climate scepticism on the rise”. This referred to a survey conducted by Populus (BBC, 2010) in Great Britain of 1001 adults. In this survey, the percentage of respondents who considered climate change a reality had fallen from 83% in November 2009 to 75% in February 2010. The Nielsen Company (2009) found that concern about climate change in the UK decreased by 2% in the period October 2007 (30%) to October 2009 (28%). At the same time, Angus Reid (2009, 2010) revealed an increase of 6% (Nov. 2009: 21%, Apr. 2010: 27%) in the number of people believing that climate change is a theory that has not yet been proven. In summer 2009, the percentage of UK citizens answering the same way had been as low as 16%, which points to an increase of 11% points within a period of nine months.
- **European Union:** The EU Directorate-General for Communication (Eurobarometer, 2009) surveyed people in European countries (N > 26.000) on how they rated the seriousness of climate change. Results show the same pattern: the proportion of respondents considering climate change to be a very serious problem has continuously decreased over the last years from 75% (March -April 2008) to 68% (Jan.-Feb. 2009) to 63% (Aug.-Sep. 2009).
- **Canada:** The Nielsen Company (2009) reports a drop of 9% in climate change concern of Canadians from 38% in October 2007 down to 29% in October 2009.
- **Australia:** In Australia, concern about climate change has also decreased. Gallup (Puglise and Lyons, 2010) questioned Australian adults about their perception of

climate change and its impact on them and their families. In 2008, three quarters responded with very or somewhat serious, with about one fifth (21%) considering it not very serious or not serious at all. In 2010, the latter fraction had grown to 29% and the percentage of people considering it serious was down to 69%.

- **New Zealand:** ShapeNZ (2010) carried out national online surveys involving 1000 New Zealanders for three years in a row. Although the number of those who consider climate change to be a problem to be dealt with now or urgently remains high at 65%, the figure has fallen from 76% in 2008 (-11%). The percentage of those who think climate change is not a problem at all is 17% (up from 9% in 2008 and 8% in 2007).
- **United States:** A decrease in awareness as well as in concern over the last years has also been reported for the United States. The Pew Research Center states in its 2010 summary of findings that dealing with climate change ranks at the bottom of the public's list of priorities: just 28% consider this a top priority. Since 2007, when the item was first included on the list and 38% considered it a top priority, the percentage that says addressing climate change should be a top priority has fallen by 10 points. In 2009, the Pew Research Center (2009) reported fewer Americans seeing solid evidence of climate change since 2006. There has been a sharp decline over the past year (-14%) in the percentage of Americans who say there is solid evidence that global temperatures are rising. The decline was less sharp before: it decreased from 77% in August 2007 to 71% in 2008. In addition, fewer Americans see climate change as a very serious: only 35% still do in October 2009, down from 44% in April 2008, 45% in January 2007 and 43% in July 2006.

In 2007, 45% answered the question "How serious a problem is global warming?" with "very serious" and 8% with "not a problem". These were the highest and lowest respective values over the three years period from 2006 through to 2009.

Gallup (Newport, 2010) registered fewer Americans saying climate change would have a significant effect on them or their way of life. The percentage dropped to 32% from a 40% high in 2008. Two thirds of Americans said climate change will not affect them in their lifetimes. These shifts during the past two years have been particularly striking (Newport, 2010).

Also Krosnick (2010, p. 2), reports that fewer and fewer Americans believe that climate change is real. In his poll ((Stanford University, 2010) ), a downward tendency was

found in the proportion of people who believe climate change is happening from 84% in 2007 to 80% in 2008 to 74% 2010, after all a 10% regression over the last three years. Gallup surveys (Newport, 2010) show a very similar pattern: A decrease in American people who feel climate change has already begun or will start within a few years is 12% (from 65% in 2008 to 53% in 2010).

#### **4. A long term development?**

Thus, the first question raised above may be answered positively: the recent decline in attention and concern in Hamburg about climate change is not an anomaly, something specific for Hamburg or Germany, but part of a broader pattern of general decline in many countries.

Thus, we have to address the second question, namely to what extent this recession is an intermittent development or part of a longer term development. Unfortunately, only very few studies are reaching back over longer periods of time – say the early 1990s – and these few only cover the American view.

Newport (2010) reports Gallup survey data over a period of more than ten years. They show that the percentage of those who said climate change would pose a serious threat (Figure 3) increased gradually from 1997 through 2008. The trend in these responses reversed in 2009, with slightly fewer Americans saying climate change would have a significant effect in their lifetimes. In 2010, that percentage was down even more, marking a six-point drop from 2009, and coming close to where it was nine years ago. An analogous peak in 2007 can be observed not only with respect to any personal threat suffered from climate change. About half of Americans still agree that climate change is real, as 49% say the effects of the problem have already begun or will do so in a few years (wording see supplementary information<sup>8</sup>). Gallup data (Newport, 2010; Jones and Saad, 2011) show highest scores for this statement in March 2008.

This trend becomes even more obvious in the ABC News/Washington Post poll (2009). The belief in the earth's warming peaks at 85% in 2006 before turning back to values of the late 1990s (Figure 3). The number of Americans who believe in climate change has declined in 2009 to its lowest since 1997 albeit on a high level.



We conclude from these – admittedly sparse evidence – that the recent decline in attention and concern is more of an intermittent character; similar declines have taken place in the Gallup time series (Figure 3) from 2000 to 2004; possibly they are part of a series of attention cycles.

**About here:**

**Figure 3 Global warming: is it happening?** ABC News/Washington Post poll, USA

## **5. Conclusion**

A decline in the public attention and concern about climate change has taken place not only in Hamburg but in many other parts of the world. This is reflected in several surveys undertaken in the western world in recent years and covering similarly short time spans. Although the wording of questions differs, they all point to the fact that the threat of climate change is less of an issue to people today than a few years ago.

Short term changes of concern, extending across a few years, can plausibly be related to different causes, such as

- Information fatigue resulting from intensive media coverage (e.g. Nordhaus and Shellenberger, 2009),
- Influence of recent weather (Krosnick, 2010), such as cool or warm conditions or active or quiet hurricane seasons.
- Also political events, which play out in the media, have an effect. In 2009/2010 several such events took place, mostly with a negative connotation, namely the “ClimateGate” publication of confidential emails among prominent climate scientists, the failure of the Copenhagen COP-negotiations and claims of misrepresentation by the IPCC. Events with a positive connotation were Al Gore’s film “An Inconvenient Truth” in 2006, the publication of the Stern Review on the Economics of Climate Change also in 2006 and of the Fourth Assessment Report (AR4) of the United Nations Intergovernmental Panel on Climate Change (IPCC, 2007).

The observed hype of public attention about climate change is only relative. The recent decline of attention and concern could be explained by the above mentioned factors,

with a relatively high level in about 2006, and relatively low values more recently after the events in 2009/2010 together with regional weather conditions consistent with the public narrative of global warming of heat and more extreme weather events. Thus, a return to levels in earlier years is not improbable.

**About here:**

**Figure 4 Temporal development of a number of climate change survey indicators: serious concern in Hamburg about climate change**, Hamburg survey 2008-2011 (this article), **personal worry about global warming in the US**, Gallup poll, USA (Jones, 2011), **confidence in the scientific community that the warming is real (manifestation) and man made (attribution)** (Bray, 2010), **and normalized presence of newspaper articles in the US and Germany with terms like “global warming” etc.** (Grundmann, pers. comm., 2011). Note that the media coverage should be viewed with reservation since the considered newspapers changed and other inhomogeneities may be present.

An open question remains with respect to the longer term tendency. Figure 4 describes two factors, which one could expect to influence public concern, namely the confidence of the scientific community in the analysis of man-made climate change, and the overall level of reporting about the issue in newspapers. Both factors show a long term increase, towards more reporting (Grundmann, pers. comm.), and more confidence in the scientific conclusion of warming (“manifestation”) and its man-made cause (“attribution”) (Bray, 2010). On the other hand, the concern in the US, according to Gallup (Newport, 2010), remains mostly stationary, with some variations, around 60%, right from the beginning of the surveying in 1989.

It is puzzling that the concern, at least in the US, began at such high levels, at times when the scientific confidence was relatively low – before the first IPCC reports have been published – as well as the media coverage was considerable less than the coverage attained in the last decade of years (see also Nisbet and Myers 2007).

We conclude that we have a recent decline in public attention and concern about climate change; that this decline is similar throughout the western world. This decline may be a manifestation of attention cycles or be driven by short term events. And it is plausible that the recent trend may reverse in the coming years. Concerning the long

term development, we see a decoupling of scientific confidence as well as media coverage, a phenomenon which needs more analysis.

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