

The Moderation of Dissent: A response to Monkton and Hafemeister & Schwartz

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Introduction

This brief communication addresses the results from two surveys of climate scientists asked to address issues of their science, including the notion of scientific consensus concerning global warming and whether or not this consensus is represented in the IPCC reports. The first survey, conducted in 1996, was well received within the climate science community (see Bray and von Storch 1997, 1999). The second survey, conducted in 2003, was tainted with claims that those scientists not convinced of global warming theory had the opportunity to submit multiple responses to the survey and, as such, the survey received little acknowledgement in the climate science community and efforts for subsequent publications met opposition. A full discussion of the sampling and response rates, complete with descriptive statistics for all variables is available at:

http://www.gkss.de/central_departments/library/publications/berichte_2007/index.html GKSS-2007-11 'The perspectives of climate scientists on global climate change'

While the results of the surveys indicate that there is indeed 'a considerable presence within the scientific community of people who do not [fully] agree with the IPCC conclusion that anthropogenic CO₂ emissions are very likely responsible for the global warming that has occurred since the Industrial Revolution' (APS, Editor, News Letter 07, 2008 Forum on Physics and Society), the results also indicate that for a large majority of scientists there has been a shift towards a more positive acceptance of the IPCC consensus on this matter since 1996. We contend that the acceptance of the conclusions of the IPCC, i.e. consensus, is not necessarily strictly present or strictly absent, but can take on levels of acceptance, as would be expected in a less than perfect world. While Hafemeister & Schwartz, and Christopher Monckton, go to great lengths to indicate the pros and cons of existing theory, neither article comments on the levels of agreement from either persuasion in the climate science community.

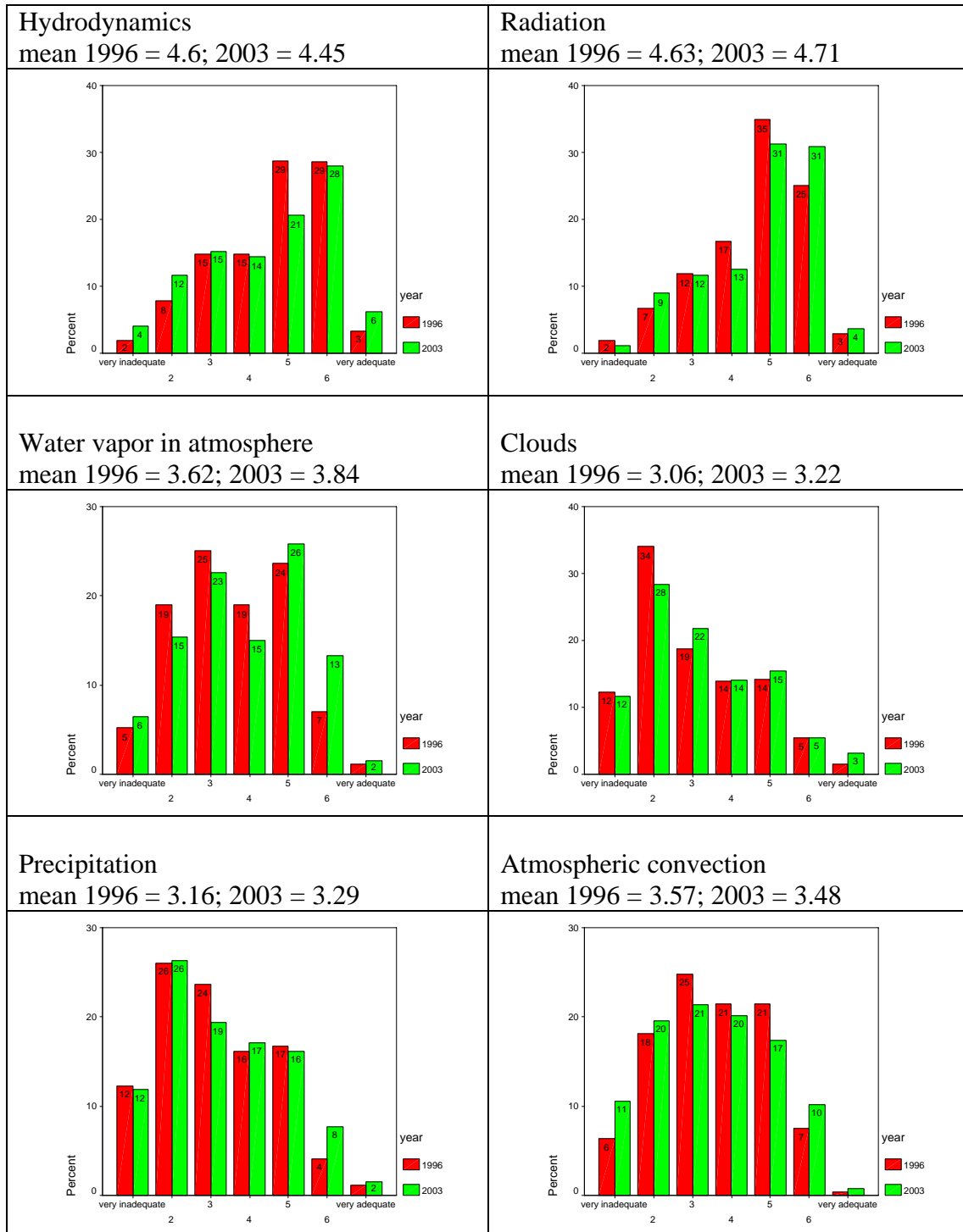
According to Hafemeister & Schwartz 'The data over the past decade is now solidifying in general agreement with theory.' and conclude 'Earth is getting warmer. Basic atmospheric models clearly predict that additional greenhouse gasses will raise the temperature of Earth.' Note the use of the term 'solidifying' and not solidified. This indicates a process underway and it is precisely the state of this process we wish to identify. We also take exception to the tendency of Monckton to refer to the IPCC as if it comprises the entire climate science community, or at least those who support the notion of anthropogenic warming. Support for anthropogenic warming theory and support for the IPCC are not one in the same. In the following we will present a brief summary of how our samples of 546 climate scientists in 1996 and 557 in 2003 assessed first, components of the theory of anthropogenic warming and second, how they aligned their sentiments with the IPCC.

Assessing the Theory

We begin with an assessment of what constitutes the theory and model components of climate science. The intention is to demonstrate any shift in distribution over time. Climate scientists were asked 'How well do you think atmospheric climate models

can deal with the following processes:?' The response range was defined as a value of 1 = very inadequate and a value of 7 = very adequate. The theoretical components in question are noted and the results are presented in Figure 1.

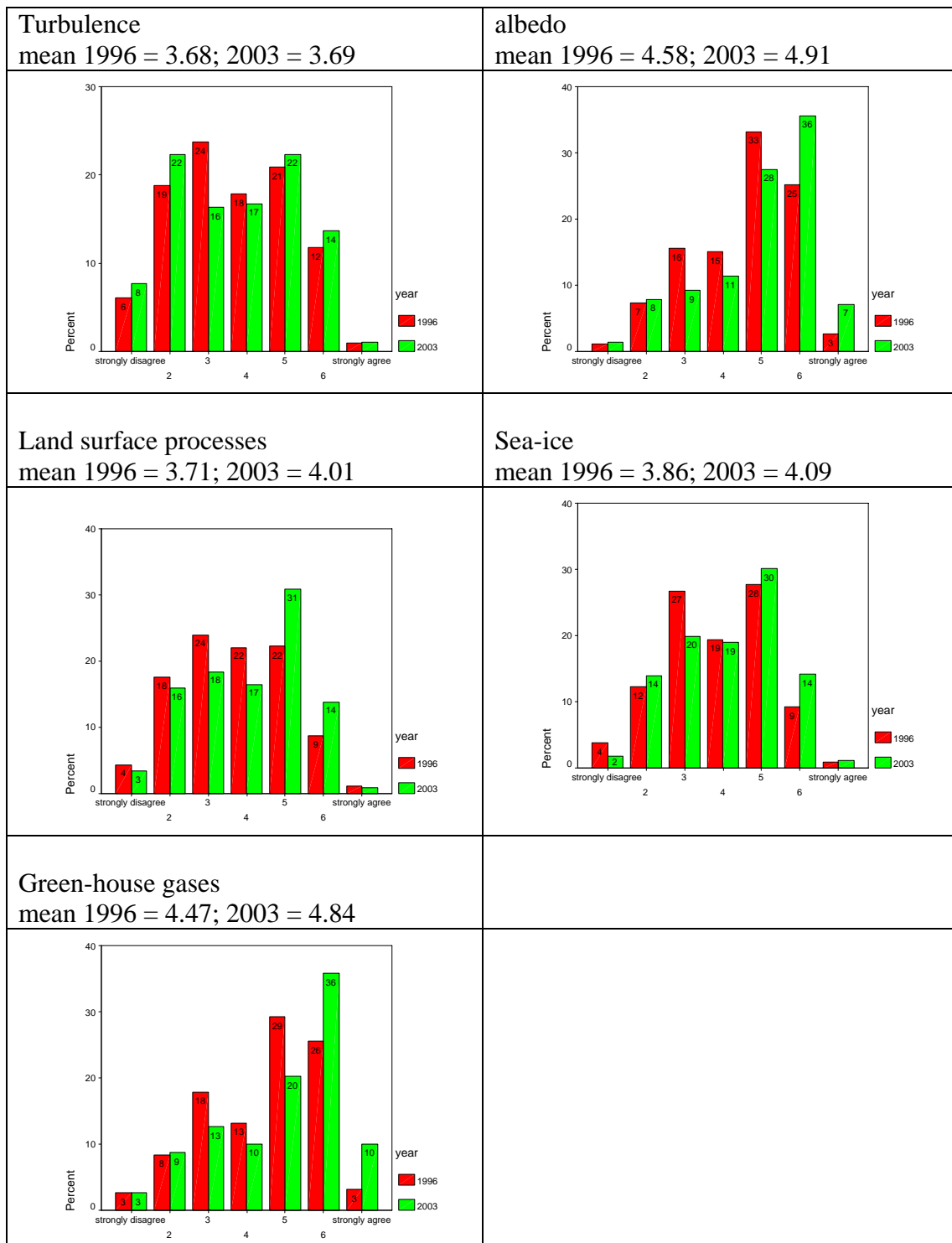
Figure 1. How well do you think atmospheric climate models can deal with the following processes?



The distributions indicate improvement has been marginal over the years but it should be keep in mind that science is typically incremental in terms of advancing understanding, and therefore this is not out of the ordinary for a scientific endeavor.

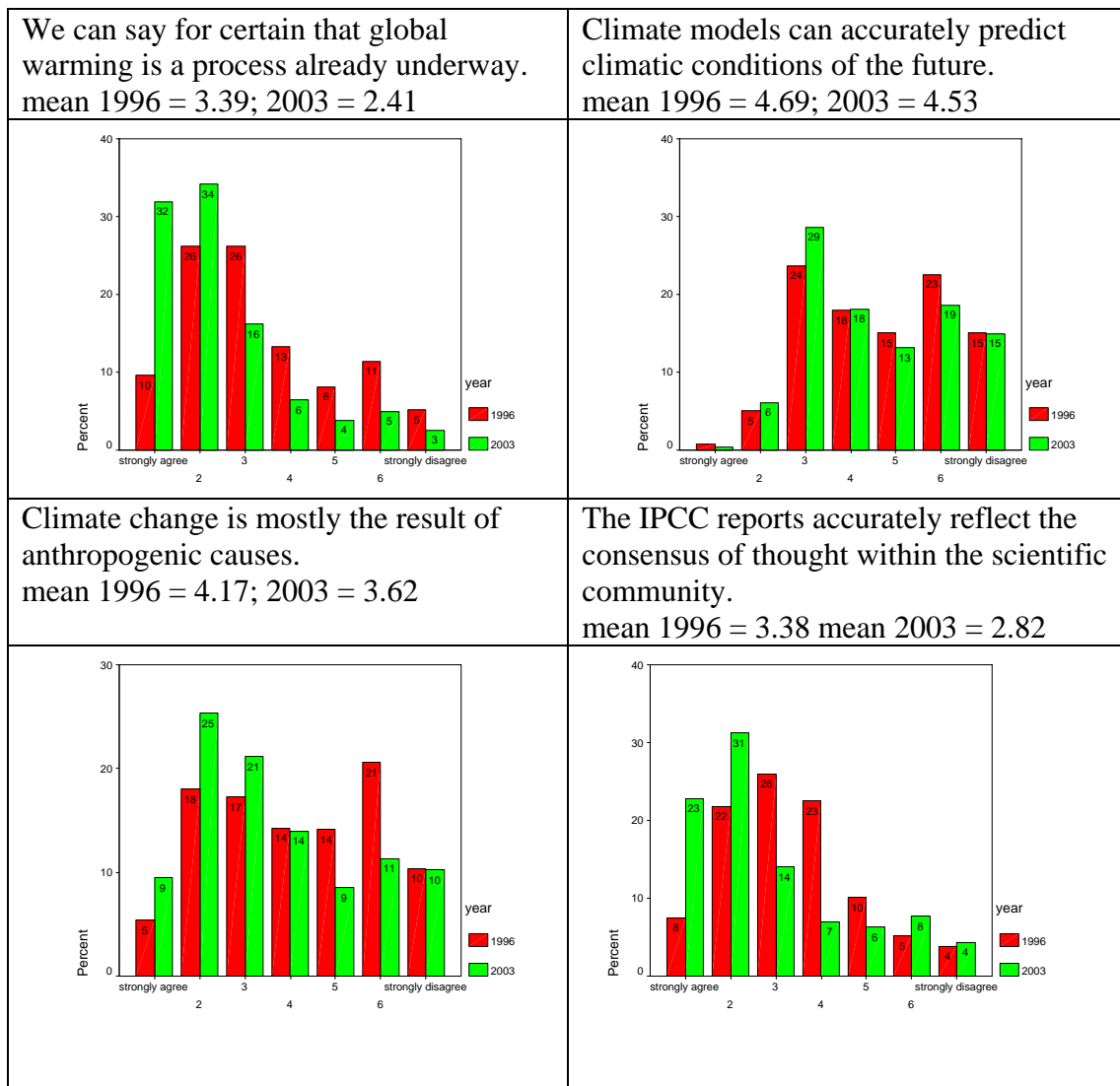
Results of questions, directed at specific processes (which would include feedbacks), are presented in Figure 2 The response range is 1 = strongly disagree, 7 = strongly agree.

Figure 2. The current state of scientific knowledge is developed well enough to allow for a reasonable assessment of the effects of



Of note, 4 out of the 5 distributions show a shift towards an improved assessment of the abilities of the science, particularly when concerning the understanding of greenhouse gases. However, does this mean that the climate science community perceives that: 1. climate change is already underway (Hafemeister & Schwartz)?; 2. climate models can accurately predict climatic conditions of the future (Hafemeister & Schwartz)?; 3. that climate change can be attributed to anthropogenic causes (Hafemeister & Schwartz)?; and 4. that the IPCC reports accurately reflect the consensus of thought within the scientific community (implied by Monckton)? The data pertaining to these matters is presented in Figure 3.

Figure 3. Addressing Main Points of Hafemeister & Schwartz and Monckton



In response to the claims of Hafemeister & Schwartz, there seems to be a reasonably large shift in the distribution of scientists claiming that global warming is underway, but it is not unanimous nor without some hesitation, although this is what would be expected in the assessment of any science. The ranking of climate models to 'predict' the future are not overly optimistic, at least not as of 2003, however, some improvement in the assessment is noticeable between 1996 and 2003. Here possibly the results are shaped by terminology. Whereas Hafemeister & Schwartz talk of

prediction and the survey questions about prediction, modelers are more inclined to talk in terms of projection, however this distinction has not been investigated in our surveys to date.. Does the scientific community attribute the presence of any global warming trend to anthropogenic causes? It would appear that overall there has been a shift towards agreement but that this tendency has not necessarily signaled unanimity.

In response to Monckton's implicit charge, that scientific consensus and the content of the IPCC reports are one and the same, the data indicates while the level of agreement between the scientific community and the content of the IPCC reports has increased, it would be premature to make the claim that one is simply the reflection of the other.

The 'Editor's Comments' (APS Newsletter, July 2008) opens with a statement of intent to 'kick off a debate concerning on of the main conclusions of the International Panel on Climate Change (IPCC) [...] that anthropogenic CO₂ emissions are very probably likely to be primarily responsible for the global warming that has occurred since the Industrial revolution.' The invited paper by Monckton presents arguments against the methods employed by IPCC authors to support this conclusion. Hafenmeister & Schwartz, in their invited contribution conclude 'Basic atmospheric models clearly predict that additional greenhouse gasses will raise the temperature of Earth' thereby supporting the IPCC conclusion. What we have attempted to demonstrate in our contribution is that the climate science community extends beyond the confines of the IPCC (a body with a significant political dimension) and maintains a *healthy* level of skepticism, necessary for the advancement of any science, while at the same time sharing a rough congruence with the advances of the IPCC.

References

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