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Research trends



Tackling climate change on three fronts: politics, public opinion and science

GERT-JAN GERAEDS

US President Barack Obama's priority to battle global warming and the success of Al Gore's movie *An Inconvenient Truth* are only two examples of the growing political and public interest in climate change. In 2001, Gerald Stanhill published a bibliometric study into the growth of climate change science (1). He found that over a 25-year period between 1970 and 1995 the annual number of publications on climate change in the abstracting journal of the *American Meteorological Society* increased from 14 to 372.

Stanhill published his analysis in the journal *Climatic Change*, one of the first journals dedicated to the problem of climate variability and change. Showing significant growth rates, *Climatic Change's* publication data from 1996 onward indicate a continuation of the trend that Stanhill describes: the number of articles and reviews published in the journal increased from 83 in 1996 to 162 in 2007 while simultaneously maintaining a positive citation trend, as indicated by the average citations per paper (see Figure 1). A modest rise in the number of unique authors and unique author affiliations in the journal over the same period suggests that this growth in output is at least partly the result of attracting new minds to the problem.

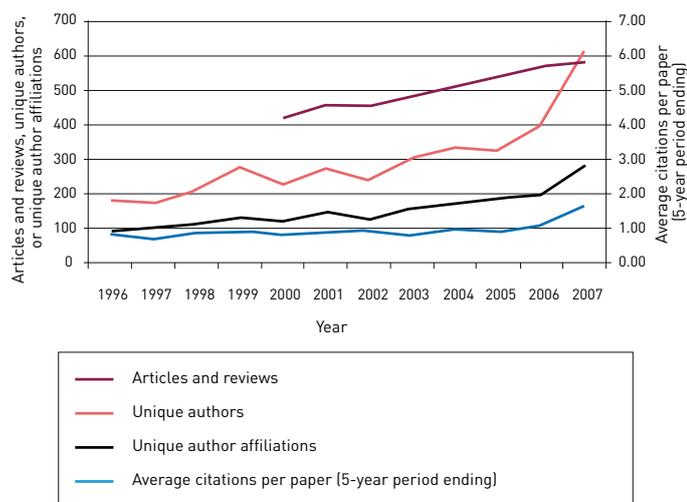


Figure 1 – Publications and citation trends in the journal *Climatic Change* have risen steadily during the last decade. Source: Scopus

The power of public opinion

In his article, Stanhill emphasizes the impact of extra-scientific factors, such as public interest and government support, on the growth of climate change studies: "The continued public interest and political support needed for this to occur is at least partially dependent on the emergence within the near future of unambiguous and palpable evidence of widespread and economically damaging climate change, preferably in accordance with current scientific predictions."

According to Hans-Martin Füssel, senior research fellow and head of the working group on adaptation in the research domain Sustainable Solutions at the Potsdam Institute for Climate Impact Research (PIK) in Potsdam, Germany: "The growth in scientific publications on climate change identified in the review study by Stanhill is remarkable in itself, but it covers only part of the literature. The last decade saw a remarkable growth in climate change-related studies in the social sciences, economics and engineering that are unlikely to be covered in the *Meteorological and Geostrophysical Abstracts*. This growth is also reflected in the recent launch of several specialized journals, such as *Mitigation and Adaptation Strategies for Global Change*, *Climate and Development*, and *Carbon and Climate Law Review*. It would certainly be worthwhile to conduct an updated review study that includes literature from all three working groups of the Intergovernmental Panel on Climate Change."

Stephen Schneider, Founder and Editor of *Climatic Change*, adds: "I don't know if the scientific output on climate change will continue to increase as it has over the years. I do know, however, that despite the launch of several new journals, *Climatic Change* has grown and shows growth again this year."

Schneider agrees that the development of climate change research depends, at least partially, on public interest: "It is a matter of policy and in the end it comes down to the question of how much the public is willing to spend. It is true that people want evidence of global warming; people want certainties. On the other hand, people also understand that uncertainties can never be ruled out completely. Financial investments in climate change research are like any other insurance that people buy to protect against future uncertainties. Unfortunately, extreme weather events like hurricane Katrina or the heatwave in 2003 in Europe that killed more than 50,000 people are more likely to get the media's and other people's attention."

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Harnessing political will

According to Schneider, the US, as a major contributor of CO₂ emissions and an industrial and political power, plays a critical role in the course climate change policy will take: "President Obama's approach is a dramatic improvement from that of the previous administration. His biggest challenge will be to get support from Congress, which tends to think local and short term, while a global approach and long-term vision are needed."

Schneider writes in the introduction of his new book scheduled for publication later this year, *Science as a Contact Sport; Inside the Battle to Save Earth's Climate* [2]: "Today, climate change is acknowledged by most climatological experts around the world. Some have replaced the term global warming with global heating or the global heat trap or simply climate disruption, to indicate our human agency in what has occurred. The more jargon-bound scientists, in their endless striving to prove dispassionate objectivity, call this anthropogenic climate change, an accurate phrase, but not a favorite of newspaper headline writers and TV anchors.

"This acknowledgement of global concern has been achieved through surmounting numerous obstacles along the way. Policymakers, lobbyists, financial interests and extreme skeptics have struggled mightily to steer public opinion – and the funds associated with it – in their preferred directions. Most mainstream scientists have fought back with the weapons at their disposal: methods of truth seeking, such as peer review, responsible reporting of research data, best practice theory, international cooperation and cautious calls for policy consideration. The battle is by no means won. The world needs all our combined strengths to cope with the dangerous climate impacts already in the pipeline, much less prevent far more damaging climate change 20 or more years from now.

"If only President Obama and former rival Senator John McCain – an early supporter of climate action – could unite in showing leadership from one end of Pennsylvania Avenue to the other, we might at last achieve meaningful climate policy."

Useful links:

[Intergovernmental Panel on Climate Change](#)
[An Inconvenient Truth](#)
[World Meteorological Organization](#)
[American Meteorological Society](#)
[Stephen H. Schneider](#)
[Environmental science and ecology, Elsevier](#)

References:

- [1] Stanhill, G. (2001) "The growth of climate change science: a scientometric study", *Climatic Change*, Vol. 48, pp. 515–524.
 [2] Schneider, S. (2009) "Science as a contact sport; inside the battle to save earth's climate", to be published by National Geographic Society Press.



Stephen Schneider with the bust of Svante Arrhenius, who performed the first CO₂ climate change calculations over 110 years ago.

Stephen H. Schneider is the Founder and Editor of the journal *Climatic Change*. He has published more than 215 articles that have been cited more than 3,800 times since 1996 [source: Scopus]. He is co-author of the article "Fingerprints of Global Warming on Animal and Plants" (2003), *Nature*, 421, pp. 57–60, which has received 730 citations to date. His new book *Science as a Contact Sport; Inside the Battle to Save Earth's Climate* will be published by National Geographic Society Press later this year.