

Scientific methods, media coverage, public awareness and climate change

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The issue of anthropogenic climate change and the way the media is handling and communicating it is of paramount importance. As early as 1896, Svante Arrhenius recognized the issue of global warming and highlighted the relationship between atmospheric carbon dioxide, CO₂, increase and rising surface temperature. This has raised awareness among climate scientists to focus on climate change and the human contribution to this change. With the advent of computer power, accurate measurement instruments, and the development of advanced climate models, a large body of scientific research has been conducted, which led to a large body of knowledge on climate change by scientists from different research centers and universities across the world. The overwhelming part of this massive literature volume shows an undeniable consensus on anthropogenic climate change. There is, however, a small group of scientists who are denying the anthropogenic origin of, or (to be fair) contribution to the observed climate change. A different opinion is a common and necessary part but also a healthy sign for scientific progress, as there is a need for scientific scrutiny of the scientific research and publications to establish new knowledge. Scientific knowledge is advanced through scientific methods, which might be complex but follow a number of well-defined logical and rational steps, testing the scientific hypotheses, often using observation data. Further scientific quality and consensus building is an integral part of the scientific process where different theories are tested repeatedly through different methods to reach the high scientific quality that is a pre-requisite for decision makers and politicians to take the right decision, and provide safe and sustainable solutions to our changing environment. Equally important, is the challenge to communicate the scientific results, by the scientific community, in a clearer way to the public to avoid confusion and help to have a better picture of what is going on.

The IPCC, the Intergovernmental Panel on Climate Change, a United Nations body for assessing the science related to climate change (www.ipcc.ch) prepares Assessment Reports (AR) about knowledge on climate change, causes and impacts. The whole process is

reviewed by experts. The reports are based on a set of scrutinized scientific reviews, which are then condensed into a summary. And to ascertain highest possible credibility to the scientific results as well the summary is further reviewed by expert peers. This process of consensus building is not achieved in one go. It is based on an iterative process, which yields, in fact, many Assessment Reports, now culminating with the Sixth Assessment Report (AR6), due for release in 2022. It is important that the public should be aware that the reports on climate change, causes and effects, are based on a wholly comprehensive scientific process to get the best possible answer to scientific questions of societal importance. And this brings us to the point on how we best evaluate scientific quality, to get the most reliable basis for decision making.

We cannot deny the fact that there is media coverage of climate change, its impact and the anthropogenic contribution to global warming. But the question one should ask, and which begs for answers, is 'how is the information communicated to the public about scientific results and how reliable they are, and what is the level of public awareness on this?'

The letter of Caserini et al. attempts to investigate claims made by a group of scientists and their supporters/signatories by analyzing their scientific credentials. The analysis is based on a systematic demographic and bibliographic surveys of the supporters of a Petition and Declaration by a group of scientists denying the serious threats of climate change on humanity and human civilization. The letter identifies a number of key points, which help evaluate the validity of the widespread claims made by the group.

The letter provides one suggestion on how to evaluate credibility of scientific statements. And its dissemination is important for both the scientific community and the public, and should contribute to rectify some of the misinformation that could have resulted. In summary, the letter is a good initiative, and we, as scientific community, should encourage more debate on what scientific quality is and how scientific results should be evaluated and trusted. We welcome more articles and debate on this issue. Equally important, is the role played by the media in following and disseminating the scientific results, and

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presenting the scientific process, to the general public, a challenging task ahead! The media today is multifaceted, with one-way (broadcasting) and interactive (social) media. We believe both media are invaluable, and should

be used to accomplish the above task. It is therefore important to encourage and boost interaction between the scientific community and the media, and welcome any such initiative.