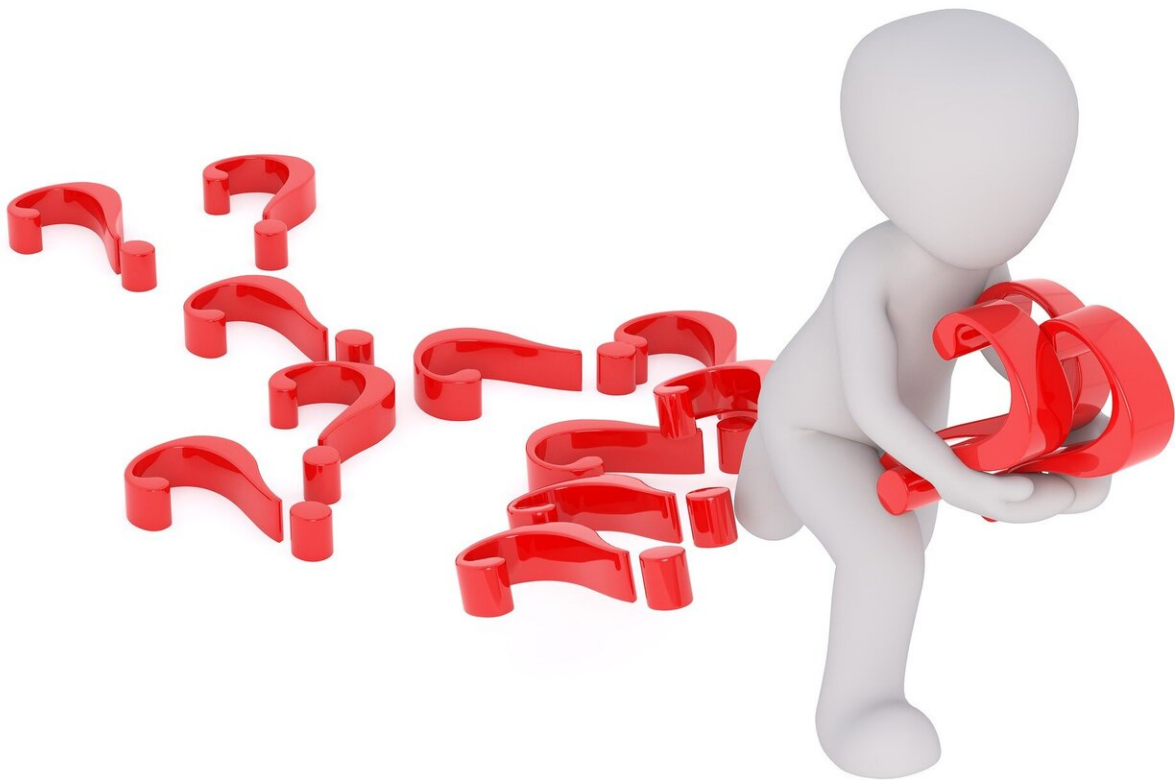


The risks of communicating extreme climate forecasts

February 19 2021



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For decades, climate change researchers and activists have used dramatic forecasts to attempt to influence public perception of the problem and as a call to action on climate change. These forecasts have frequently been for events that might be called "apocalyptic," because they predict cataclysmic events resulting from climate change.

In a new paper published in the *International Journal of Global Warming*, Carnegie Mellon University's David Rode and Paul Fischbeck argue that making such forecasts can be counterproductive. "Truly apocalyptic forecasts can only ever be observed in their failure—that is the world did not end as predicted," says Rode, adjunct research faculty with the Carnegie Mellon Electricity Industry Center, "and observing a string of repeated apocalyptic forecast failures can undermine the public's trust in the underlying science."

Rode and Fischbeck, professor of Social & Decision Sciences and Engineering & Public Policy, collected 79 predictions of climate-caused apocalypse going back to the first Earth Day in 1970. With the passage of time, many of these forecasts have since expired; the dates have come and gone uneventfully. In fact, 48 (61%) of the predictions have already expired as of the end of 2020.

Fischbeck noted, "from a forecasting perspective, the 'problem' is not only that all of the expired forecasts were wrong, but also that so many of them never admitted to any uncertainty about the date. About 43% of the forecasts in our dataset made no mention of uncertainty."

In some cases, the forecasters were both explicit and certain. For example, Stanford University biologist Paul Ehrlich and British

environmental activist Prince Charles are serial failed forecasters, repeatedly expressing high degrees of certainty about apocalyptic climate events.

Rode commented "Ehrlich has made predictions of environmental collapse going back to 1970 that he has described as having 'near certainty'. Prince Charles has similarly warned repeatedly of 'irretrievable ecosystem collapse' if actions were not taken, and when expired, repeated the prediction with a new definitive end date. Their predictions have repeatedly been apocalyptic and highly certain...and so far, they've also been wrong."

The researchers noted that the average time horizon before a climate apocalypse for the 11 predictions made prior to 2000 was 22 years, while for the 68 predictions made after 2000, the average time horizon was 21 years. Despite the passage of time, little has changed—across a half a century of forecasts; the apocalypse is always about 20 years out.

Fischbeck continued, "It's like the boy who repeatedly cried wolf. If I observe many successive forecast failures, I may be unwilling to take future forecasts seriously.

That's a problem for climate science, say Rode and Fischbeck.

"The underlying science of climate change has many solid results," says Fischbeck, "the problem is often the leap in connecting the prediction of climate events to the prediction of the consequences of those events."

Human efforts at adaptation and mitigation, together with the complexity of socio-physical systems, means that the prediction of sea level rise, for example, may not necessarily lead to apocalyptic flooding.

"By linking the climate event and the potential consequence for dramatic effect," noted Rode, "a failure to observe the consequence may unfairly

call into question the legitimacy of the science behind the climate event."

With the new Biden administration making climate change policy a top priority, trust in scientific predictions about climate change is more crucial than ever, however scientists will have to be wary in qualifying their predictions. In measuring the proliferation the forecasts through search results, the authors found that forecasts that did not mention uncertainty in their apocalyptic date tended to be more visible (i.e., have more search results available). Making sensational predictions of the doom of humanity, while scientifically dubious, has still proven tempting for those wishing to grab headlines.

The trouble with this is that scientists, due to their training, tend to make more cautious statements and more often include references to uncertainty. Rode and Fischbeck found that while 81% of the forecasts made by scientists referenced uncertainty, less than half of the forecasts made by non-scientists did.

"This is not surprising," said Rode, "but it is troubling when you consider that forecasts that reference uncertainty are less visible on the web. This results in the most visible voices often being the least qualified."

Rode and Fischbeck argue that scientists must take extraordinary caution in communicating events of great consequence. When it comes to climate change, the authors advise "thinking small." That is, focusing on making predictions that are less grandiose and shorter in term. "If you want people to believe big predictions, you first need to convince them that you can make little predictions," says Rode.

Fischbeck added, "We need forecasts of a greater variety of climate variables, we need them made on a regular basis, and we need expert assessments of their uncertainties so people can better calibrate themselves to the accuracy of the forecaster."

More information: David C. Rode et al, Apocalypse now
Communicating extreme forecasts, *International Journal of Global
Warming* (2021). DOI: 10.1504/IJGW.2021.112896

Provided by Carnegie Mellon University

Citation: The risks of communicating extreme climate forecasts (2021, February 19) retrieved 11
July 2024 from <https://phys.org/news/2021-02-citing-uncertainty-decreases-faith-science.html>

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