



Are climate models overpredicting global warming?

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Many recent climate models have been predicting dire global changes. The problem is climate forecasters currently ignore decades of scientific best-practices that would offer more accurate predictions.

Thankfully, there are attempts to rectify the truly dodgy methodology that has been used to crank out forecasts of 21st-century climate.

An important new climate paper published in Nature Climate Change, written by Viktoria Eyring of the University of Bremen and 28 co-authors from around the world, does just that.

That's sorely needed. Here's why:

Weather forecasters know that some models work better than others in specific situations, and they tend to rely on the versions that work best, depending upon the forecast problem. When the issue is a potential big snow along the eastern seaboard, forecasters usually lean upon the model from the European Center for Medium-Range Weather Forecasting (the "Euro" model). When diagnosing shifts in jet stream patterns a week or 10 days ahead, they may place more weight on the American Global Forecast System model.

But the United Nations' Intergovernmental Panel on Climate Change simply averages up the 29 major climate models to come up with the forecast for warming in the 21st century, a practice rarely done in operational weather forecasting. As dryly noted by Eyring and others "there is now evidence that giving equal weight to each available model projection is suboptimal."

Indeed. The authors of the new paper show that the aggregate models are making huge errors in three of the places on earth that are critical to our understanding of climate.

The first big error is over the entire Southern Ocean, the huge circumpolar body of water separating South America, Africa and Australia from Antarctica. The 29 models calculate, on average, it to be much less cold than it actually is, with large swaths 2.7 degree Fahrenheit or more warmer than reality. Given that the southern margin of the Southern Ocean is mostly sea-ice, this means that vast areas of real-world ice are simulated as being liquid water.

Further, almost all of the moisture that precipitates over Antarctica comes from the Southern Ocean, and an enormous amount of additional water vapor in forecasts comes from the practice of using models that raise the ocean temperature a few degrees beyond what it actually is. The

result is a forecast of gobs of nonexistent snow originating from an ocean with swaths of nonexistent open water.

Another important error is along the west coast of South America. In the real world, thanks to the steady pull of the trade winds diverging water away from the coast, cold subsurface water wells up. When, for largely unknown reasons, the trade winds temporarily weaken, the surface water temperature rises dramatically, inducing an El Niño that may cause floods thousands of miles away in Southern California.

In a world experiencing a modest warming trend, El Niño usually yields record warm temperatures. The model also greatly underestimates a similar area of upwelling off of the African coast that induces the tropical Atlantic's version of El Niño, known as the Atlantic Niño.

There's a current theory that some of the heat from each El Niño is retained in the atmosphere, and temperatures do not return to their previous value once an El Niño goes away. As a result, surface temperatures appear to jump with each big one. Climate models that substantially underestimate the natural cold upwelling have a propensity to create El Niño-like conditions, which may explain their tendency to predict too much global warming.

But one of the models actually works. According to University of Alabama's John Christy and his colleagues, only the Russian model, designated INM-CM4, gets things right. So why not weight heavily on the model that is working? Perhaps because it has less global warming in it than all the other U.N. models?

Its successor, INM-CM5, is so good that it is the only one that diagnoses the "pause" in warming from 2002 to 2014. That the "pause" was real is obvious in the global surface temperature record that the that the IPCC relies upon most heavily, from the Climate Research Unit at the University of East Anglia.

It's high time that the scientific community come clean about longstanding climate shenanigans. Averaging up a large number of models that don't work well is guaranteed to produce an unreliable forecast. Using ones that get things right, like the two Russian models, is accepted best-practice in weather forecasting. With regard to forecasting methodology, new research at least moves climate science closer to the 20th century.

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