CAN CLIMATE MODELS PREDICT CLIMATE CHANGE?

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Let's talk about climate models.

Specifically, let's talk about the climate models that attempt to predict the future temperature of the planet. But before we do, it's important that you know a little about me.

I'm a physicist. I taught at Columbia University and then at Princeton for five decades.

I have published over 200 peer-reviewed scientific papers. I have coauthored several books, including one of the first on how carbon dioxide emissions—CO2—affects the climate.

I served as the director of the Office of Energy Research at the US Department of Energy. And before that, I invented the "sodium guide star," which is still used on most big astronomical telescopes to measure and correct for atmospheric turbulence—that is, for the unpredictable movement of air and water. This turbulence blurs the images of stars and other space objects.

One more thing: I care deeply about the environment. We live on a beautiful planet. I want to keep it that way. I've spent a lot of time working to do just that.

In short, I know a lot about the earth's atmosphere and climate. I also know a lot about long-term predictive climate models.

And I know they don't work. They haven't worked in the past. They don't work now. And it's hard to imagine when, if ever, they'll work in the foreseeable future.

There's a common-sense reason for this.

Aside from the human brain, the climate is the most complex thing on the planet. The number of factors that influence climate—the sun, the earth's orbital properties, oceans, clouds, and, yes, industrial man—is huge and enormously variable.

Let me try to narrow this down. For the purposes of illustration, let's just focus our attention on water.

The earth is essentially a water planet. A major aspect of climate involves the complicated interaction between two very turbulent fluids: the atmosphere, which holds large amounts of water (think rain and snow), and the oceans, which cover fully 70% of the earth's surface.

We can't predict what effect the atmosphere is going to have on future temperatures because

we can't predict cloud formations.

And the convection of heat, oxygen, salt and other quantities that pass through the oceans, not to mention weather cycles like El Niño in the tropical Pacific, make predicting ocean temperatures an equally difficult business. We can't predict either side of the atmosphere/ocean equation.

But we can say this with certainty: Water—in all its phases—has huge effects on atmospheric heating and cooling. Compared to water—H20, carbon dioxide—CO2—is a minor contributor to the warming of the earth.

It's devilishly difficult to predict what a fluid will do. Trying to figure out what two fluids will do in interaction with each other on a planetary scale over long periods of time is close to impossible.

Anyone who followed the forecast of Hurricane Irma's path in the late summer of 2017 should understand this. First, the models predicted a direct hit on Miami and the east coast of Florida. Then, defying these predictions, the hurricane suddenly veered to the west coast of Florida. In other words, even with massive amounts of real-time data, the models still could not accurately predict Irma's path two days in advance.

Does any rational person believe that computer models can precisely predict temperatures decades from now?

The answer is, they can't. That's why, over the last 30 years, one climate prediction after another –- based on computer models –- has been wrong.

They're wrong because even the most powerful computers can't solve all the equations needed to accurately describe climate.

Instead of admitting this, some climate scientists replace the highly complex equations that describe the real-world climate with highly simplified ones—their computer models.

Discarding the unmanageable details, modelers "tune" their simplified equations with lots of adjustable inputs—numbers that can be changed to produce whatever result the modelers want.

So, if they want to show that the earth's temperature at the end of the century will be two degrees centigrade higher than it is now, they put in the numbers that produce that result.

That's not science. That's science fiction.

I'm Will Happer, Emeritus Professor of Physics at Princeton University, for Prager University.