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Inconvenient Uncertainties

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We know enough to act now. What we don't know should prompt us to even more decisive action.

By Gernot Wagner and Martin L. Weitzman

CAMBRIDGE, Mass. — THE headline in The New York Times yesterday was succinct. “By 2047, Coldest Years May Be Warmer Than Hottest in Past, Scientists Say.” Not, say, “around 2050” or “within our lifetime.” The specificity makes the crisis feel real, imminent and terrible. Call it a convenient truth. The story was about a new study published this week in the journal *Nature* that calculated that by 2047, the average temperature will be hotter across most parts of the planet than it had been at those locations in any year between 1860 and 2005.

In truth, attention to the year 2047 is misguided. Climate around the world has already changed to a point where we can perceive humanity’s fingerprint. Extreme weather events like the two hurricanes that hit New York City in the past two years are going to be only more intense in the future.

The study’s authors acknowledged the uncertainties, adding a margin of error of five years to the 2047 estimate. The date will occur at different times in different places, with the tropics being the most immediately vulnerable.

Their caveats underscored the uncertainties inherent in making predictions about our climate future.

Specificity can help reduce the numbing complexity of climate change to something that we can all understand — and fear. And perhaps that is the first step in mobilizing to fix the problem. But scientists speak in probabilities. They can measure where we are and venture predictions of where we

are going; they cannot tell us precisely where temperatures will end up, what the impacts will be, and where important tipping points lie along the way.

Global atmospheric levels of carbon dioxide passed 400 parts per million earlier this year — higher than at any time in the last three million years. Even at these concentrations, we are facing enormous uncertainties.

Roughly three million years ago, global sea levels were 50 to 80 feet higher than today, and camels lived in Canada, which just goes to show how large the uncertainties truly are. We aren't anywhere close to turning this around. The atmospheric concentrations of greenhouse gases are still going up, and that increase is still accelerating.

What this will mean for future temperatures is hard to pinpoint with precision, but we estimate that without further action to reduce emissions, the planet is on track to see the eventual global average rise by at least 3 degrees Celsius (5.4 degrees Fahrenheit) above preindustrial levels. This is most likely past the point when we will see the melting of the ice sheets in Greenland and West Antarctica, raising sea levels by dozens of feet. But putting too much emphasis on one particular temperature figure is like zeroing in on the year 2047.

What is scarier still is the uncertainty about the truly extreme outcomes. Our own calculations estimate that there is a roughly 5 percent to 10 percent chance that the eventual average temperature could be 6 degrees Celsius higher, rather than 3. What this would mean is outside anyone's imagination, perhaps even Dante's. We can obsess about all of these scenarios. A rise of three degrees would be bad enough. But when you factor in the uncertainty, there is even more reason to put global warming on an even more sharply decreasing path.

The best way to do that would be to put a global price on carbon dioxide pollution. Making it more expensive to pollute would redirect the ingenuity, effort and money from a high-carbon, low-efficiency economy to creating a new, low-carbon, high-efficiency one.

The world is a messy place. The scientific method imposes some order, but in the case of climate change, that order is probabilistic. For the sake of science and the planet, we should not become distracted by a false sense of certitude. Imprecise truths are the most inconvenient ones. We know enough to act now. What we don't know should prompt us to even more decisive action.

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