

It seems paradoxical to say that climate change is uncertain but not in doubt. At this point, we can be highly confident that greenhouse gases are disrupting the climate system and that the disruption will be very serious unless we act. But there's considerable uncertainty about the magnitude of climate change and its local impacts. A second paradox is that the uncertainty is far from comforting — instead, it just aggravates our problems.

In terms of the uncertainty, recent research suggests that local impacts are even harder to model than we thought. [Real Climate](#) reports on a new study showing that “regional temperatures and precipitation for the next 50 years may be less predictable due to the chaotic nature of the large-scale atmospheric flow.” The findings suggest that that “while some regions could experience almost zero warming over 50 years, this will be compensated by substantially stronger in other regions (because they also find that the global mean temperatures to be largely insensitive to the different model initial conditions).” In other words, impacts may be unpredictably spotty and locally severe.

The uncertainty about local impacts makes adaptation planning much more difficult than it would be if regional forecasts were more reliable. For example, one of the graphs shows that over the next half century Seattle could get 2° F warmer on average or 7° warmer. (Forecasted global change in this model was about 4.5° F).over the same period.) Because of the uncertainty, adaptation will probably be less successful — an additional reason to invest in mitigation measures to reduce greenhouse gases in the first place. It also means that our adaptation strategies will need to be more nimble so they can be readjusted as we get additional information about how local conditions develop. And the new findings are a reminder that we need to worry about both average impacts and the extreme impacts in some times and places.

In short, we can't expect a future world in which we have (say) 5° F warming. Instead, we may well end up with a world that also has 0° in some places, 2° in others, 7° elsewhere, and 10° still elsewhere — but without being sure in advance where those places will be. That's an even bigger problem than evenly distributed 5° F change.

The bottom line: uncertainty compounds our problems rather than reducing them.