Last week the east coast sweltered. Berlin reached 99 degrees and China experienced a heat wave through much of the country. This week it's our turn in Southern California as temperatures reach triple digits. As I argued last week, when asked if these heat waves are related to climate change, the answer should be yes.

A new study in Geophysical Research Letters led by Stanford professor Noah Diffenbaugh confirms my point. The study's results are alarming in two respects. First, climate change will cause many more episodes of extreme heat and those episodes will be lengthy. Second, these changes will occur within the next 20 years assuming the kinds of temperature increases — just 1 degree Celsius over that time period — that climate models are projecting.

Diffenbaugh and his team used sophisticated models, including one model capable of forecasting temperatures in very small geographic areas, just 15.5 square miles. According to Diffenbaugh, the research team was surprised by the results. Beginning in just a decade, his modeling predicts that between 2020 and 2030 the central and western U.S. is likely to experience five heat waves at least as extreme as the most extreme heat wave occuring between 1950 and 1999. And by the 2030s we're likely to see "persistent drier conditions over most of the U.S."

These temperature changes will occur with just one degree Celsius of additional warming. And they'll occur soon. Moreover the changes will occur regardless of any policy action taken by the global community over the next few years — we've already emitted the greenhouse gases that are putting pressure on the globe's temperatures. Climate change is no longer a problem that will affect our children or our children's children. It's happening now and we are already feeling its consequences. But we can do something about how serious it will get — if increasing episodes of extreme heat and persistently hot and drier conditions will occur with just 1 degree of warming, imagine the consequences if we allow climate change to really spiral out of control, leading to 3-5 degrees C increases in average global temperatures.