Quickest Climate Shift since the Dinosaurs went Extinct

August 01, 2013; 5:03 PM

The rate of global climate change over the next century will be at least 10 times faster than any climate shift in the past 65 million years, according to new research from Stanford University.

This accelerated rate of climate change will likely place a great deal of stress on terrestrial ecosystems around the world, according to the report, which is in the current issue of *Science.*

Noah Diffenbaugh, an associate professor of environmental Earth system science, and Chris Field, a professor of biology and of environmental Earth system science and the director of the Department of Global Ecology at the Carnegie Institution took a targeted but broad review of scientific literature on climate change that can affect ecosystems. They then looked at how recent observations and projections for the next century compare to past events in Earth's history, according to the report.

Below are key excerpts from the Eurekalert story

*"We know from past changes that ecosystems have responded to a few degrees of global temperature change over **thousands** of years," said Diffenbaugh. "But the unprecedented trajectory that we're on now is forcing that change to occur over **decades**. That's orders of magnitude faster, and we're already seeing that some species are challenged by that rate of change."*

Extreme weather events such as heat waves and heavy rainfall are projected to become more severe and frequent.....

For example, the researchers note that, with continued emissions of greenhouse gases at the high end of the scenarios, annual temperatures over North America, Europe and East Asia will increase 2-4 degrees C by 2046-2065. With that amount of warming, the hottest summer of the last 20 years is expected to occur every other year, or even more frequently.

By the end of the century, should the current emissions of greenhouse gases remain unchecked, temperatures over the northern hemisphere will tip 5-6 degrees C warmer than today's averages. In this case, the hottest summer of the last 20 years becomes the new annual norm.

Some climate changes will be unavoidable, because humans have already emitted greenhouse gases into the atmosphere, and the atmosphere and oceans have already been heated.

The more dramatic changes that could occur by the end of the century, however, are not written in stone. There are many human variables at play that could slow the pace and magnitude of change or accelerate it, according to Diffenbaugh.