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Purdue researcher identifies climate change hotspots

WEST LAFAYETTE, Ind. - A study using one of the most complete climate modeling systems in the world points to southern California, northern Mexico and western Texas as climate change hotspots for the 21st century.

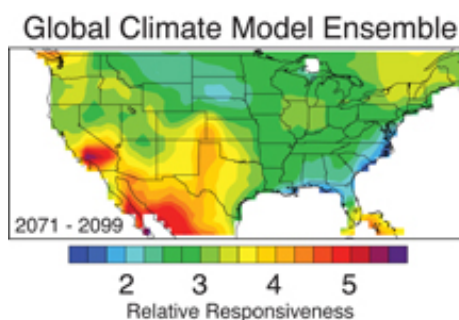
The research team, led by Purdue University associate professor of earth and atmospheric sciences Noah S. Diffenbaugh, developed a new technique to identify hotspots based on the magnitude of temperature and precipitation response to greenhouse gas emissions.

Diffenbaugh said more detailed information about human-driven climate change is necessary to create effective strategies to reduce greenhouse gas emissions and to prepare for the possible effects of climate change.

"It is estimated that there will be a global warming of 1 to 6 degrees by the end of the century, and we examined how this could manifest at smaller spatial scales and within shorter time periods," said Diffenbaugh, who also is a member of the Climate Change Research Center within Purdue's Discovery Park. "We identified areas likely to be most responsive to changes in greenhouse gas emissions. This study provides information at the state-scale, as opposed to a global or regional average, which could be useful for climate change policy."

Such information could feed the trend of state governments entering into emissions agreements independent of federal action, he said. Last year more than one quarter of U.S. governors entered into agreements such as The Western Regional Climate Action Initiative and the Midwest Greenhouse Gas Accord.

"One interesting and surprising result is that we see the same hotspot patterns even at lower greenhouse gas concentrations," Diffenbaugh said. "This suggests that we may be able to see these hotspots emerging already."



Map of Climate Hotspots
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A paper detailing the results of the National Science Foundation funded research will be published in an upcoming issue of the journal Geophysical Research Letters. Co-authors include Filippo Giorgi of the Abdus Salam International Centre for Theoretical Physics in Trieste, Italy, and Jeremy S. Pal of Loyola Marymount University.

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IMAGE CAPTION:

This image shows a map of climate change hotspots based on temperature and precipitation response to greenhouse gas emissions. Purdue associate professor of earth and atmospheric sciences Noah S. Diffenbaugh led a research team that developed a new technique to identify hotspots for the 21st century. (Image courtesy of Diffenbaugh laboratory)

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