Global Warming Study Predicts Wild Ride
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WASHINGTON - The world - especially the Western United States, the Mediterranean region and Brazil - will likely suffer more extended droughts, heavy rainfalls and longer heat waves over the next century because of global warming, a new study forecasts.

But the prediction of a future of nasty extreme weather also includes fewer freezes and a longer growing season.

In a preview of a major international multiyear report on climate change that comes out next year, a study out of the National Center for Atmospheric Research details what nine of the world's top computer models predict for the lurching of climate at its most extreme.

"It's going to be a wild ride, especially for specific regions," said study lead author Claudia Tebaldi, a scientist at the federally funded academic research center.

Tebaldi pointed to the Western U.S., Mediterranean nations and Brazil as "hot spots" that will get extremes at their worst, according to the computer models.

And some places, such as the Pacific Northwest, are predicted to get a strange double whammy of longer dry spells punctuated by heavier rainfall.

As the world warms, there will be more rain likely in the tropical Pacific Ocean, and that will change the air flow for certain areas, much like El Nino weather oscillations now do, said study co-author Gerald Meehl, a top computer modeler at the research center. Those changes will affect the U.S. West, Australia and Brazil, even though it's on South America's eastern coast.

For the Mediterranean, the issue has more to do with rainfall in the tropical Atlantic Ocean changing air currents, he said.

"Extreme events are the kinds of things that have the biggest impacts, not only on humans, but on mammals and ecosystems," Meehl said. The study, to be published in the December issue of the peer-reviewed journal Climatic Change, "gives us stronger and more compelling evidence that these changes in extremes are more likely."

The researchers took 10 international agreed-upon indices that measure climate extremes - five that deal with temperature and five with precipitation - and ran computer models for the world through the year 2099. What Tebaldi called the scariest results had to do with heat waves and warm nights. Everything about heat waves - their intensity, length and occurrence - worsens.

"The changes are very significant there," Tebaldi said. "It's enough to say we're in for a bad future."
The measurement of warm nights saw the biggest forecast changes. Every part of the globe is predicted to experience a tremendous increase in the number of nights during which the low temperature is extremely high. Those warm night temperatures that should happen only once every decade will likely occur at least every other year by the time we reach 2099, if not more frequently, Tebaldi said.

Warm nights are crucial because Chicago's 1995 heat wave demonstrated that after three straight hot nights, people start dying, Meehl said. However, heat wave deaths are decreasing in the United States because society has learned to adapt better, using air conditioning, noted University of Alabama at Huntsville atmospheric sciences professor John Christy. He is one of a minority of climate scientists who downplay the seriousness of global warming.

Similarly, the days when the temperature drops below freezing will plummet worldwide. That's not necessarily a good thing, because fewer frost days will likely bring dramatic change in wildlife, especially bug infestation, Tebaldi said.

"It's a disruption of the equilibrium that's been going for many centuries," Tebaldi said. But she noted that a lengthier growing season in general is good.

"This notion of the greening of the planet ... generally is a positive benefit," Christy said.

Christy, who did not participate in the study but acknowledges that global warming is real and man-made, said an increase in nighttime low temperatures makes much more sense than the rain-and-drought forecasts of the paper.

One of the larger changes in precipitation predicted is in the intensity of rain and snowfall. That means, Tebaldi said, "when it rains, it rains more" even if it doesn't rain as often.

Tebaldi's assessment jibes with the National Climatic Data Center's tracking of extreme events in the United States, said David Easterling, chief of the center's scientific services. Easterling's group has created a massive climate extreme index that measures the weather in America. Last year, the United States experienced the second most extreme year in 95 years; the worst year was in 1998.

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On the Net
"Going to the Extremes" study:
http://www.cgd.ucar.edu/ccr/publications/klu_multimodel_extremes_revised.pdf
U.S. government's climate extreme index:
http://www.ncdc.noaa.gov oa/climate/research/cei/cei.html