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## **BOB DOPPELT: Climate change makes extreme weather normal**

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*For The Register-Guard*

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The “tornado of a lifetime” ripped through the Southeast last month, killing more than 300 people.

Record drought contributed to wildfires that so far have burned more than 1.4 million acres across Texas.

The rampaging Mississippi River reached its highest levels in almost 100 years, damaging property throughout the basin.

Across the nation and the planet, unprecedented extreme weather events are on the rise.

Last year, the Federal Emergency Management Agency declared a record 81 disasters, almost three times the average seen over the past 60 years, leading to \$6.7 billion in total damages. Munich Re, one of the largest reinsurers in the world said, “The only possible explanation for the rise in weather-related catastrophes is climate change.”

Meanwhile, some pundits claim that concern about climate change has “fizzled” — as if declining public opinion and the failure to advance policies makes the problem less real. And coal, oil and gas companies, along with other groups, are fighting hard to block the Environmental Protection Agency’s ability to regulate heat-trapping carbon emissions.

A massive clash of worldviews is preventing us from seeing that the conditions of our planet have changed fundamentally, and so must our thinking and behavior.

Let me repeat the traditional scientific proviso that it is very difficult to attribute a single extreme weather event to climate change. Many factors, some human-related and others natural, contribute to extreme events. But one climate expert says it’s time to drop that disclaimer.

At the American Meteorological Society’s January meeting, Kevin Trenberth, director of the Climate Analysis Section at the National Center for Atmospheric Research and one of the world’s experts on extreme weather and climate change, said, “Given that global warming is unequivocal, the null hypothesis should be that all weather events are affected by global warming rather than the inane statements along the lines of ‘of course we cannot attribute any particular weather event to global warming.’ ”

That does not mean warming directly creates any particular storm or that the number of

extreme events will rise automatically each year. Tornadoes, floods, droughts and wildfires occur naturally, and some years will be more disastrous than others.

What Trenberth meant is that human-induced changes to the atmosphere have created conditions that can make storms more extreme and more frequent. For example, hotter temperatures have increased the amount of water vapor in the atmosphere by about 4 percent, which invigorates storms and increases the amount of moisture they deliver.

Fortunately, Oregon has dodged the bullet of disastrous storms so far this year. But local weather patterns increasingly will change as the global climate changes. Twisters occasionally touch down in the Willamette Valley, but they are not likely to be a major threat. Research suggests that big rain and windstorms, floods, wildfires and droughts are the most likely local risks.

Geography and development patterns will determine the impacts of these events.

As one might expect, groups opposed to action on climate change have ignored Trenberth's comments, as well as the dramatic rise in deadly weather events. Instead, they continue to attack climate scientists and try to cast doubt on their studies.

However, the 2009 release of hacked e-mails that was supposed to prove that climate scientists were doctoring their studies, and other similar assaults, found nothing of the kind. Then last month, the leader of a University of California, Berkeley, team purportedly established to discover flaws in studies showing human-induced climate change told a congressional panel that their preliminary review actually confirmed the validity of the science.

As with the "birthers" who refuse to accept that President Obama was born in the United States, this news won't stop hard-core climate change deniers from trashing the science. In stressful times such as today, it is natural for people to hunker down and defend their long-held worldviews by steadfastly denying the changes happening around them. Tension escalates between those wanting to maintain the status quo and those wanting new approaches, leading to heightened acrimony and paralysis.

But as Trenberth said, climate change is now unequivocal. Extreme weather is the new normal. Wise people and organizations will rise above the rancor caused by clashing worldviews and prepare for these events, while also reducing their carbon pollution to reduce the likelihood of such events.

Lane County Emergency Management offers information about how to prepare for extreme floods, heat and wildfires. Working with all levels of government, my organization produced recommendations for preparing for climate change in the Upper Willamette basin; information on how to cut emissions in your home and place of business can be found on the city of Eugene's sustainability website.

Both reports can be found online at [www.theresourceinnovationgroup.org/climate-preparedness](http://www.theresourceinnovationgroup.org/climate-preparedness).

Preparing for climate change and reducing our contribution to it is not about ideology. It is just good common sense.

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University of Oregon.

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