

2012 – hottest year on record

By Juliet Eilperin, Washington Post

Last year was the hottest on record for the contiguous United States, shattering the previous mark set in 1998 by a wide margin, the National Oceanic and Atmospheric Administration announced Tuesday.

The average temperature was 55.3 degrees, 1 degree above the previous record and 3.2 degrees more than the 20th-century average. Temperatures were above normal in every month between June 2011 and September 2012, a 16-month stretch that hasn't occurred since the government began keeping such records in 1895.



Sunset on Tahoe's South Shore in 2012. Photo/LTN file

Federal scientists said that the data are compelling evidence that climate change is affecting weather in the United States and suggest that the nation's weather is likely to be hotter, drier and potentially more extreme than it would have been without the warmer temperatures.

Last year's record temperature is "clearly symptomatic of a changing climate," said Thomas R. Karl, who directs NOAA's National Climatic Data Center. Americans can now see the sustained warmth over the course of their own lifetimes – "something we haven't seen before." He added, "That doesn't

mean every season and every year is going to be breaking all-time records, but you're going to see this with increasing frequency."

Alaska and the Pacific Northwest didn't experience record-setting heat last year; a cool-weather pattern over the Pacific Ocean kept temperatures lower.

Although the new analysis focuses on the United States, it has triggered an intense debate over whether global temperatures will reach dangerous levels by the century's end. In 2009, the world's leaders pledged to keep global temperatures from rising above pre-industrial levels by 2 degrees Celsius, or 3.6 degrees Fahrenheit. Now many academics and policymakers say that goal may be out of reach.

"We have to begin the conversation about cruising past 2 degrees, because we're on course for that," said John Podesta, who chairs the liberal think tank Center for American Progress. "It's hard to contemplate and scary to contemplate, but it has to be addressed at this point."

Vanderbilt Law School professor Michael Vandenberg said today's leaders will be judged harshly by future generations for not focusing on climate change.

"A hundred years from now, they're not going to be talking about health care or the fiscal cliff," he said. "But they will ask, 'What did you do when we knew we were going to have serious climate change?'"

John R. Christy, who directs the Earth System Science Center at the University of Alabama in Huntsville, said some researchers are exaggerating the severity of the threat. He said that the right climate target is "in the mind of the beholder," given that rising energy demand is a sign that many poor people are struggling "to be lifted out of their current condition."

“No one in Washington can stop that,” he said. “And, right now, carbon is the most accessible and affordable way to supply that energy – so CO2 emissions will continue to rise because of the undeniable benefit carbon energy brings to human life.”

Last year, the United States experienced several weather events – including extreme storms, a historic drought and wildfires – that many scientists say can be exacerbated by climate change.

Some scientists, however, think it is premature to blame droughts or hurricanes on human-caused warming. Georgia Institute of Technology atmospheric scientist Judith A. Curry said in an e-mail that the global average temperature for 2012 will not set a record – last year will probably be the eighth warmest. “Natural variability continues to dominate the occurrence of extreme weather events,” she said.

Nonetheless, many scientists are worried about rising emissions. The International Energy Agency estimated last month that coal will come close to surpassing oil as the world’s top energy source in 2017 , when an additional 1.2 billion metric tons will be burned annually. In late November, the World Resources Institute reported there are nearly 1,200 proposed coal plants around the globe, three-quarters of which are planned for China and India.

By Jan. 1 of this year, the Kyoto Protocol was supposed to have cut the world’s greenhouse gas output by 5 percent compared with 1990 levels. While the signatories as a whole are likely to meet that target, in part because of the shutdown of Eastern European factories during the 1990s, global carbon emissions overall rose 54 percent during that same period, according to the Global Carbon Project.

As a result, many experts are engaged in a discussion over whether they should continue pressing for ambitious carbon

cuts in the near term or adjust their goals in the face of the prospect of a much warmer world.

In 2004, Princeton University professors Robert Socolow and Stephen Pacala wrote an influential paper outlining how the world could stabilize its greenhouse emissions by mid-century through a series of “wedges,” using current technology, such as sharply increasing nuclear power worldwide, eliminating deforestation and converting conventional plowing to no-tillage farming.

Now, Socolow has published an article in the Vanderbilt Law Review that he describes as his “let’s get real here” lecture, in which he outlines what the world can realistically achieve over the next four decades. Environmentalists “don’t think it’s time to start the bargaining” on what’s an appropriate climate target, Socolow said, but they need to adjust some of their goals in light of the projected temperature rise.

Compromises include capturing and storing carbon from power plants, he added, “since I don’t think we can put the fossil fuel industry out of business.”

At the same time, some researchers are pushing for much steeper emissions cuts. On Wednesday, the journal Environmental Research Letters will publish a paper showing that although Socolow and Pacala projected emissions could be stabilized by cutting 175 billion tons of carbon emissions over 50 years, accelerating emissions over the past decade mean that it could require more than 500 billion tons of avoided emissions to achieve the same goal.

Steven Davis, a UC Irvine earth system science professor and the study’s lead author, said he and his colleagues were seeking a “way to describe the magnitude of the challenge” in tackling climate change.

Chris Field, who directs the Carnegie Institution for Science’s global ecology department at Stanford University,

noted that although it is impossible to say whether the world will be “safe” if it limits the temperature rise to 2 degrees Celsius, he compared it to “the number of flat tires I can tolerate on a road trip in my car.”

“With even one flat, there is a risk of a serious accident. But because I am a careful driver, and I have a spare, one is probably ok,” he wrote in an e-mail. “With two flats on the trip, I know I don’t have a spare for the second one, and I understand that the risk of a serious accident is increased. . . . For more than two flats, things get really messy.”

Several activists who track international climate talks identified the next three years as critical, saying negotiators need to forge a new pact by 2015 in order to lock in needed carbon cuts. Alden Meyer, who directs strategy and policy for the Union of Concerned Scientists, said major emitters will not agree to meaningful cuts until they view it as in “their national self-interest.”

In the United States, a combination of high temperatures and dry conditions last year took a serious toll on the nation’s agricultural sector. NOAA’s Karl noted that the Midwest had been relatively wet for several years, which had curbed the impact of warmer temperatures.

In 2012, he said, “both the day and the nighttime temperatures were breaking their all-time records,” and that combined with drier conditions amounted to “a double whammy.”

The warmest March on record meant vegetation levels were 25 percent higher than normal that month, but many of those crops dried up because 39 percent of the United States experienced severe or extreme drought in 2012.