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Climate Change Study Finds U.S. Is Already Widely Affected

By JUSTIN GILLIS MAY 6, 2014

The effects of human-induced climate change are being felt in every corner of the United States, scientists reported Tuesday, with water growing scarcer in dry regions, torrential rains increasing in wet regions, heat waves becoming more common and more severe, wildfires growing worse, and forests dying under assault from heat-loving insects.

Such sweeping changes have been caused by an average warming of less than 2 degrees Fahrenheit over most land areas of the country in the past century, the scientists found. If greenhouse gases like carbon dioxide and methane continue to escalate at a rapid pace, they said, the warming could conceivably exceed 10 degrees by the end of this century.

“Climate change, once considered an issue for a distant future, has moved firmly into the present,” the scientists declared in a major new report assessing the situation in the United States.

“Summers are longer and hotter, and extended periods of unusual heat last longer than any living American has ever experienced,” the report continued.

“Winters are generally shorter and warmer. Rain comes in heavier downpours. People are seeing changes in the length and severity of seasonal allergies, the plant varieties that thrive in their gardens, and the kinds of birds they see in any particular month in their neighborhoods.”

The report, the National Climate Assessment, was prepared by a large scientific panel overseen by the government, and received final approval at a meeting Tuesday morning in Washington. The report was unveiled at the White House, and President Obama planned to spend part of the day highlighting the

findings in interviews with television weather forecasters around the country.

The administration hopes to use the report to shore up public support for the president's climate policies as he attempts to put new regulations in place to limit emissions. A major political battle over the rules is expected this summer, with Republicans already accusing Mr. Obama of plotting a "war on coal."

Some Republican members of Congress have contended that the science of global warming is a hoax perpetrated by a global conspiracy of climate scientists, a point of view Mr. Obama has mocked as comparable to belief in a flat earth. Other Republicans concede that climate change caused by human activity is real, but nonetheless fear — as do some Democrats — that the president's policies will destroy jobs for miners and hurt the broader economy.

The report found some benefits from climate change in the short run, such as a longer growing season for crops and a longer shipping season on the Great Lakes. But it warned that these were likely to be countered by escalating damages. Food production may be hit hard by rising heat and water stress in coming decades, the report found.

"Yes, climate change is already here," said Richard B. Alley, a climate scientist at Pennsylvania State University who was not involved in writing the report but reviewed a late draft. "But the costs so far are still on the low side compared to what will be coming under business as usual by late in this century."

The ominous findings of the report are likely to give Mr. Obama fresh ammunition as he seeks to tackle the problem in a significant way. However, scientists involved in the report said there had been no political interference in their work. In fact, they went beyond any language the president has used as they cataloged risks.

"Climate change presents a major challenge for society," the report warned. "There is mounting evidence that harm to the nation will increase substantially in the future unless global emissions of heat-trapping gases are greatly reduced."

The report was supervised and approved by a large committee representing a cross section of American society, including representatives of two oil companies. Congress ordered in 1990 that a major scientific assessment of climate change be compiled every four years, though the administrations of Presidents Bill Clinton and George W. Bush were slow to comply with the law, and this is only the third report to have been produced.

One of the report's most dramatic findings concerned the rising frequency of torrential rains. Scientists have expected this effect for decades because more water is evaporating from a warming ocean surface, and the warmer atmosphere can hold the excess vapor, which then falls as rain or snow. But even the leading experts have been surprised by the magnitude of the effect.

The report found that the eastern half of the country is receiving more precipitation in general. And over the past half-century, the proportion of precipitation that is falling in very heavy rain events has jumped by 71 percent in the Northeast, by 37 percent in the Midwest and by 27 percent in the South, the report found.

"It's a big change," said Radley M. Horton, a climate scientist at Columbia University in New York who helped write the report. He added that scientists do not fully understand the regional variations.

In recent years, sudden, intense rains have caused extensive damage.

For instance, large parts of Nashville were devastated by floods in 2010 after nearly 20 inches of rain fell in two days. Last year, parts of Colorado flooded after getting as much rain in a week as normally falls in a year. This March, a landslide killed dozens after heavy rains in Washington State. Just last week, widespread devastation occurred in the Florida Panhandle from rains that may have exceeded two feet in 24 hours; the exact total is unclear because the official rain gauge at Pensacola was knocked out by the storm.

Scientists are reluctant to attribute any of these specific events to human-caused climate change, but they say that such heavy rains are consistent with what they expect in a warming climate.

The new report emphasized, however, that people should not expect global warming to happen at a steady pace, or at the same rate throughout the country. Bitterly cold winters will continue to occur, the report said, even as they become somewhat less likely.

And the regional pattern varies for many effects beyond precipitation: for instance, while most of the country has warmed sharply over the past century, the Deep South has barely warmed at all, and a section of southern Alabama has even cooled slightly. In general, colder, more northerly regions are warming faster.

The report cited the likely role of climate change in causing an outbreak of mountain pine beetles that has devastated millions of acres of pine forest across

the American West and the Canadian province of British Columbia; warmer winters and longer summers have let more of the beetles survive and reproduce at an exponential rate. It is now possible to drive for hours in some states and see mostly gray, dead trees across mountainsides.

And the report said that severe, long-lasting heat waves were likely to become much more common. For instance, it cited research saying the type of record-breaking heat wave that baked Texas in 2011 had become substantially more likely because of the human release of greenhouse gases.

On rising sea levels, the new report went beyond warnings issued recently by the United Nations. That body's Intergovernmental Panel on Climate Change warned in September that by the end of the century, sea levels could rise by as much as three feet globally if emissions continue at a rapid pace. The American scientists said the rise could be anywhere from one to four feet, and added that six feet could not be entirely ruled out. Along much of the East Coast, the situation will be worse than the global average because the land there is sinking, the scientists said.

Historically, the United States — with its large cars, large houses and high per capita consumption of energy — was responsible for more emissions than any other country. Lately, China has become the largest emitter over all, though its emissions per person are still far below those of the United States.

The report pointed out that while the country as a whole still has no comprehensive climate legislation, many states and cities have begun to take steps to limit emissions and to adapt to climatic changes that can no longer be avoided. But the report found that these efforts are inadequate compared with the magnitude of the problems that are coming.

Correction: May 6, 2014

An earlier version of a picture caption with this article misidentified a town where overflow from the South Platte River in Colorado submerged cars. It is Greeley, Colo., not Greenley.

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