

Wild Weather



by Suzanne Freeman

From tornadoes and droughts to floods, there's no argument that the weather has been wild lately. The question is: Could climate change be the cause?

- 1 In May 2011, the Upper Missouri River Basin, which stretches from Montana to Missouri, was deluged with almost a year's worth of rain—in two weeks. In August, as Hurricane Irene raced up the East Coast, Texans battled wildfires aggravated by the worst drought in the state's history. And two days before Halloween, a snowstorm blanketed the East Coast.
- 2 The year 2011 saw 14 disastrous weather events in the U.S. alone, storms that claimed more than 1,000 lives. It was the costliest year on record, with damages totaling \$52 billion.
- 3 "This wasn't just media hype," M. Sanjayan, lead scientist at the Nature Conservancy says. "It really was surprising how much we had to deal with in 2011."
- 4 So far, 2012 seems to be just as wild. Although winter in many parts of the U.S. felt more like spring, frigid temperatures gripped Europe. More than 600 weather-related deaths were reported in Europe in February, after temperatures plunged as low as -30°F (-22°C). In the remote mountain villages of Serbia, 11,000 people were trapped for weeks behind snow banks that topped 6 feet.
- 5 But a few weeks later, in France, people were walking around the streets of Paris in T-shirts.
- 6 What's causing these extremes? Scientists say that more study is needed, but many now believe that the severity of some recent weather events can be linked to climate change, though they're not sure how.
- 7 "The relationship between long-term climate and short-term events is difficult to understand," says Deke Arndt, a climatologist at the National Oceanic and Atmospheric Administration (NOAA). "It's really unknown how climate change affects single weather events."

Weather vs. Climate

- 8 Weather and climate are actually two different things. Weather is something that happens over a brief period—a rainstorm, say, or plunging temperatures overnight—while climate refers to general weather conditions over an extended period of time, even millions of years.
- 9 How weather and climate might be linked is a critical question. A report released in March 2012 by the United Nations points to mounting evidence for a connection between climate change and the increase in heat waves, heavy rainfall, and coastal flooding.
- 10 Some scientists are focusing on melting sea ice in the Arctic region, which is thought to be a direct consequence of the use of fossil fuels like coal, oil, and gas.
- 11 The burning of these fuels has led to a steady increase in greenhouse gases like carbon dioxide (CO₂), which trap more of the sun's heat in Earth's atmosphere. For complex reasons,

the Arctic is warming faster than the rest of the planet; as a result, the polar ice cap has shrunk by about 40 percent since the early 1980s.

- 12 According to Jennifer Francis, a climate researcher at Rutgers University in New Jersey, many scientists believe that the loss of sea ice is affecting the planet's weather. "The question is," she told *The New York Times* recently, "how can it not be?"

Warming Trend

- 13 Scientists trace the current warming trend to the Industrial Revolution. Technological breakthroughs led to a huge increase in the burning of fossil fuels to power our factories and cars and heat and cool our homes and offices. Since the late 1800s, the amount of CO₂ in the atmosphere has increased by more than 35 percent, and Earth's average temperature has risen by about 1.4°F (0.8°C).
- 14 British climatologist Peter Stott is one of many scientists trying to understand possible links between this warming trend and greater extremes in weather—and he has a theory. For every 1.8°F (1°C) the temperature rises, he says, the atmosphere holds 7 percent more moisture.
- 15 That doesn't increase the overall amount of rain by much, because the hotter temperatures make it more difficult for water vapor to turn into rain. But when it does rain, it rains harder. Stott estimates that for every 1°C increase in temperatures, "extreme rainfall increases 6 to 7 percent."
- 16 That could spell trouble, since the past decade was the hottest on record. And most scientists say that Earth's average temperature will continue to rise this century.

A Political Issue

- 17 In recent years, climate change has become a divisive subject in the U.S. In the world of politics at least, there's a debate on every aspect of the issue: whether Earth is actually warming; whether humans are the cause; and how, or if, we should try to deal with it.
- 18 The issue was raised in the presidential campaign among the Republican candidates who were vying to be their party's nominee against Barack Obama in 2012.
- 19 The political debate aside, most scientists expect that more wild weather in the years ahead will have a real impact on how we live.
- 20 According to Sanjayan of the Nature Conservancy, 20 or 30 years from now, "the world is going to be a much different place" than it is now. "In terms of where we grow our crops, where we get our water, where we build our cities," he says, "what we do today can dramatically affect our future."
- 21 NOAA's Arndt says that we should conserve water, prepare for droughts, and know what to do in the event of severe storms like tornadoes and hurricanes, wherever we live.
- 22 People have been dealing with dangerous weather patterns for thousands of years. But teenagers today, Arndt says, "may be the first generation that has to deal with them in a changing climate."