

IPCC Report: Global Warming—and Changing Population—Will Worsen the Toll of Extreme Weather

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Maybe we should retire the term "global warming," which makes climate change sound like a nice, pleasant bath. It's true that climate change—caused chiefly by the **rapid increase in manmade carbon emissions**—will result in warmer temperatures, fewer cold days and longer and more intense heat waves. But the real damage, both economically and in human lives, is likely to be inflicted by an increase or amplification of extreme weather events—floods, storms, droughts.

The trouble is that attributing extreme events to climate change has **always been challenging**, which makes it that much more difficult to predict how weather will respond to warming. But scientists are getting better, and a **new report** (PDF) out today from the Intergovernmental Panel on Climate Change has a clear message: more carbon emissions will mean more dangerous extreme weather events. "We need to be worried," said Maarten van Aalst, the director of the International Red Cross/Red Crescent Climate Centre and a lead author on the IPCC study, at a news conference in Kampala, Uganda. "Risk has already increased dramatically."

Like the IPCC's broad assessments of climate science—the most recent of which was **released in 2007**—this report gauges the degree of confidence scientists have in the different effects of a

changing climate. That confidence varies: scientists are very sure that we are experiencing an increase in the number of hot days and nights on a global scale, and are certain that we'll see rising temperatures in the decades to come. They're sure that economic losses from weather- and climate-related disasters has increased as well, with annual losses reaching as high as \$200 billion. They're fairly sure that the frequency of heavy storms will increase in the 21st century, and certain that sea levels will rise, impacting extreme coastal water levels.

But the researchers who put together the IPCC report are also honest about the areas where climate science is less confident—such as with tropical storms. They note that it is likely the "global frequency of tropical cyclones will either decrease or remain essentially unchanged," though there is some confidence that existing storms will become stronger. On the whole the new report—perhaps in response to criticisms of the last IPCC climate assessments, which **contained a few** embarrassing mistake—is a more measured take on the state of climate science and extreme weather events, though that has some **critics on the other side** fuming that the threat has been watered down.

Even more importantly, the IPCC report notes—correctly, I think—that climate change is just one of many possible factors driving the rising costs of extreme weather events, and that population growth and migration to vulnerable coastal areas play an even clearer role. It's something I've written about **many times before** on this site—as we get richer and become more numerous, more property and more people are being put in harm's way from storms, earthquakes, floods and droughts, amplifying the effect of any one disaster. That means the response to extreme weather needs to involve both cutting carbon emissions—to hopefully reduce the frequency and intensity of extreme weather—but also adapting to disaster, to ensure that we can better weather the storms to come. "The key takeaway is that we are expecting and counting on changing extreme weather, but that doesn't mean those events have to be extreme on the grounds," says [Sabrina McCormick, a senior fellow at the Wharton Risk Management and Decision Processes Center](#) and a lead author on the IPCC report. "There are things we can do."

Adaptation might include sea walls to deal with coastal flooding, or even better weather forecasting. But adaptation will not be cheap. Here in New York City, the Metropolitan Transit Authority, which runs the subways and some of the regional rail, is very concerned about the impact that rising sea levels might have on its operations. During Tropical Storm Irene—when the MTA took the unprecedented step of shutting down completely—the city came close to seeing the subways completely flooded, and still lost 14 miles of track on the Port Jervis line north of the city. The MTA had to use emergency powers to spend \$50 million—money it does not have—to repair the line, which remains out of operation. And in a warmer future, it could get worse, as **WNYC reported**:

Columbia's Klaus Jacob has worked with the MTA to model what would happen if you couple sea level rises – the FTA said to expect four feet by the end of this century – and intense storms like Irene.

In 40 minutes, Jacob said, all the East River Tunnels would be underwater. Jacob said he took those results to the MTA, and asked, if that happened, how long would it take to restore the flooded subway to a degree of functionality?

“And there was a big silence in the room because the system is so old,” he said. “Many of the items that would be damaged by the intrusion of the saltwater into the system could not recover quickly. You have to take them apart. You have to clean them from salt, dry them, reassemble them, test them and cross your fingers that they work. “

The MTA could try to raise its tracks to higher ground and take other steps to adapt to higher sea levels and stronger storm surges, but that protection will cost billions of dollars at a time when the system can barely make ends meet. That's how climate change—along with the other factors intensifying the effects of natural disaster—will really make itself felt, draining away resources. And that's just in developed nations that can afford—if barely—to take the needed steps to prepare for a warmer world. Poorer countries will pay in human lives. "We need to see a two-pronged approach, preparing for climate change but also working to mitigate it," says Juanita Constible of the Climate Reality Project. "There just isn't enough money" to adapt alone.

She's right. This year has already set a record in terms of **billion-dollar disasters** for the U.S., with at least 10 events—from Irene to the Texas drought to the spate of tornadoes this spring—approaching a total of \$50 billion. Unless we make some pretty radical changes in the future, we may look back on 2011 as the norm, not the extreme exception.

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