Stronger But Fewer Storms May Loom on Horizon

by Jon Hamilton, NPR

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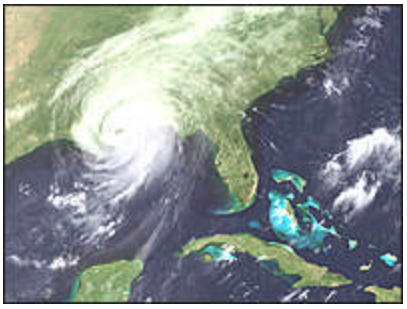

GOES Project Science Office
A satellite image shows Hurricane Katrina with the eye of the storm over New Orleans.

Hurricane Katrina offered a harsh reminder of what a hurricane can do to people in low-lying coastal areas. More than 1,800 people died in New Orleans, and along the Gulf Coast, tens of thousands lost their homes, and the storm caused more than $80 billion in damage. Katrina also raised a lot of questions about possible links between hurricanes and climate change.

Scientists have been investigating those links for decades. Today, most agree that global warming will have some effect on hurricanes (known generically as tropical cyclones) — including the potential to make them stronger. But scientists disagree on what the impact of that will be, or whether it even will be significant.

Here, a look at what's known and what's not about climate change and hurricanes.

Why would climate change produce stronger hurricanes?

The planet is getting warmer as cars and power plants put more carbon dioxide and other so-called greenhouse gases in the air.

That means the oceans are getting warmer, too. And hurricanes are fueled by warm water.

A hurricane can't form at all until water reaches about 80 degrees Fahrenheit. Water temperature also determines how strong a storm can become. The warmer the water, the higher the potential wind speeds.

In 2005, hurricanes Katrina and Rita weren't major storms until they passed over a stretch of especially warm water in the Gulf of Mexico. Then both became Category 5 storms with winds of more than 175 miles per hour.

So why are scientists arguing about climate change and hurricanes?

Sea surface temperatures and the number of hurricanes have both been on the rise in the North Atlantic since 1995. But scientists disagree about whether this is the result of climate change or a natural cycle.

And it takes a lot more than warm water to make hurricanes. They require a jump-start from powerful thunderstorms, just the right air temperature and humidity to grow, and winds that will carry a storm across the ocean without breaking it apart.

So climate change could produce some conditions, such as warmer water, that tend to strengthen hurricanes, while producing others, such as unfavorable winds, that discourage big storms.

What do the scientists agree on?

Quite a bit, actually.

They agree that warmer water is likely to increase the strength of hurricanes, which means more Category 5 storms like Katrina.

Scientists also agree that global warming is causing sea levels to rise, which makes low-lying areas like New Orleans even more vulnerable to the storm surge that accompanies a hurricane.

Finally, scientists agree that hurricanes are likely to affect many more people in the future than they have in the past. They also predict these storms will do a lot more damage.

The reason for this, though, isn't climate change. It's because since the 1950s, millions of people in the United States have moved to Florida and other vulnerable parts of the coasts. These people have built homes along the beaches and in areas just a few feet above sea level. So almost anywhere a hurricane lands these days, it will strike a home or business.

In 2006, 10 of the nation's most prominent hurricane experts, including scientists from both sides of the global warming debate, issued a statement urging the nation to reconsider its "lemming-like march to the sea."

Is there anything people can do to reduce the risk of harm from a hurricane?

Yes. Even in vulnerable areas like the Florida coast, some areas are safer than others. A building site that's a few extra feet above sea level, or that has the protection of a sand dune or sea wall, can make a big difference when a storm strikes.

The way a house is built also makes a big difference. Stilts can raise a structure above the water, while stronger walls and roofs can resist high winds. Most new houses built in hurricane-prone areas already have these features. But older homes can be greatly strengthened.

After Hurricane Andrew devastated southern Florida in 1992, the state passed much stricter building codes for houses along the coast. And in subsequent hurricanes, houses built to the new standards have fared much better than older homes.