The Miami Herald
November 06, 2012

Frankenstorms fed by climate change triple whammy

BY SHAYE WOLF

It was the day the ocean came ashore. As Hurricane Sandy lurched into the East Coast, we watched in horror as floodwaters crippled Manhattan and inundated more than 70 percent of Atlantic City.

This Frankenstorm has given us a hair-raising look at the power of nature - and the harm and heartbreak it can inflict. But as a scientist, I think it's critical to understand these disasters are becoming more unnatural. The terrifying truth is that we face a future full of Frankenstorms because of manmade climate change.

We've always had hurricanes, of course. But powerful scientific evidence shows that superstorms are being fed by a climate change triple whammy. Global warming, it turns out, is cranking up three key factors that increase America's risk of superstorms and the damage they cause.

First, global warming loads storms with more energy and more rainfall. A new study in the Proceedings of the National Academy of Sciences found that Katrina-magnitude Atlantic hurricanes have been twice as likely in warm years compared with cold years.

That's because hotter ocean temperatures add energy to storms and warmer air holds more moisture, causing storms to dump more rainfall. And global ocean temperatures hit their second-highest level on record in September, according to the National Oceanic and Atmospheric Administration.

Second, melting sea ice and accelerating Arctic warming are causing changes in the jet stream that have been connected to more extreme weather in the United States. Essentially, climate change in the Arctic is altering the jet stream, causing bursts of colder air to drop down farther into the United States. In Sandy's case, a collision with a cold front acted to turn the hurricane into a superstorm.

Recent research, including studies by experts at the Georgia Institute of Technology and Rutgers University, has linked Arctic warming to increased risk of a variety of extreme weather events. Arctic sea ice, by the way, hit a record low this summer.

Finally - and most urgently - storm surges are rising on top of higher sea levels, so more coastline floods during storms. That's critical because storm surge is often far more damaging than high winds - and because more than half of all Americans live within 50 miles of the coast.

Why are seas rising? Climate change is the driving force. In the northeastern United States, sea levels are rising three to four times faster

than the global average, putting major U.S. cities at increased risk of flooding, according to a recent study in Nature Climate Change. The West Coast isn't immune: Most of California could experience three or more feet of sea-level rise this century.

What can we do? The bottom line: We have to reduce carbon emissions - and quickly. We already have a law - the Clean Air Act - that could be a powerful weapon in that battle. The Environmental Protection Agency has begun using the law to fight greenhouse gas pollution, but progress has been painfully slow.

When it comes to climate change, we've been acting like the proverbial man with the leaky roof. When it's raining, we're too focused on the weather to fix the problem. And when the storm moves on, so does our attention.

But kicking this problem down the road is no longer an option. A recent report from the highly respected International Energy Agency made it clear that we are running out of time to cut carbon pollution and avert climate change's worst impacts.

Hurricane Sandy underscores the risks we face. This problem can be solved - but only if we treat global warming like the emergency it truly is.