

With Irma, Miami and Charleston face their potential nightmare hurricane scenarios

It's never good when an Atlantic hurricane is compared to Super Typhoon Haiyan, which wiped out the city of Tacloban in the Philippines in 2013 as one of the most intense tropical cyclones ever observed on the planet. Yet we find ourselves in the position to make that comparison with Hurricane Irma.

The monster storm in the Atlantic just broke the record for the longest-lived storm with winds of 185 miles per hour or greater, beating out Super Typhoon Haiyan for the title. Such records date back to the dawn of the satellite era in 1966.

The record-shattering storm is churning toward the southeastern Bahamas and Turks and Caicos islands on Thursday, where it threatens to bring a devastating 15 to 20-foot storm surge above normal tide levels. Irma — which is a Category 5 storm as of Thursday afternoon — has its sights set on the extremely vulnerable Southeast U.S., however, with the destruction it has wrought in the northern Lesser Antilles and Caribbean serving as an example of what it is capable of.

The current forecast track takes Irma across the southeast Bahamas on Thursday to a position south-southeast of Florida on Friday, before turning the storm sharply to the north-northeast on Saturday, in response to winds flowing around a dip in the jet stream across the eastern U.S.

Where that turn occurs is going to prove pivotal to the forecast, and more importantly to people's lives in southern Florida, since a later turn means a landfalling storm in the Sunshine State, whereas an early turn could see the worst of the storm's winds and waves remaining offshore.

Miami, in particular, could see a devastating hit from Hurricane Irma. The last major hurricane to hit there was Hurricane Andrew in 1992. That storm, also a Category 5, wiped out communities to the south of the city, but spared the priciest real estate along Miami Beach and in downtown due to its compact wind field and track across the southern part of Miami-Dade County.

Hurricane Irma is a larger and more powerful storm than Andrew was, and it could become the storm that current residents of Miami, now a booming gateway to Latin America, have thought would never come.

Computer model projections and the official forecast from the National Hurricane Center show that Hurricane Irma is likely to come near or over Miami and Ft. Lauderdale on Saturday night into Sunday. The exact path of the storm's center will be crucially important, since the most powerful winds and most damaging storm surge flooding will be generated by the right side, or eastern flank of the storm.

If a Category 4 or 5 Hurricane Irma were to make landfall in southern Florida and track just to the west of Miami, it would bring destructive, onshore winds to luxury high-rise condo buildings situated at the water's edge, flooding them from below, and shredding them from the top down.

Tropical storm force winds are expected to spread over Florida from south to north beginning on Saturday morning, with hurricane force winds of 75 miles per hour or greater arriving soon after that. The storm has an unusually expansive wind field, making the track of the center of the storm less relevant than usual, since even an offshore track by 20 miles or so would still bring a punishing onslaught of high winds to the eastern coast of the state.

While Florida has the strictest building codes in the country, they've never been tested in a city the size of Miami, and most residents of the city have never been through a powerful hurricane before.

In recent years, a real estate boom has pushed expensive property closer and closer to the ocean's edge, making the area extremely vulnerable to storm surge flooding, which is worsened by global warming-related sea level rise.

The population of Miami-Dade County, an east coast county that includes Miami, shot up by around 700,000 people since 1992, an increase of about 35 percent. The population in Broward County, which borders Dade County to the north, increased from 1.3 million in 1992 to 1.9 million in 2016, a change of 46 percent.

Few of these new arrivals have ever experienced a Category 4 or 5 hurricane, since the last Category 4 storm to hit Florida was Charley, in 2004. That storm made landfall on the other side of the state, just north of Tampa, sparing the

Miami area from its strongest winds.

Since the year 2000, more than 2 million new homes have been built in Florida, with about half of them constructed in the region from Tampa to Miami, according to Steve Bowen, a meteorologist at the insurance company Aon Benfield.

In Miami, many of the new homes have been in the form of expensive high-rise condominiums. High-rise buildings can be death traps in intense hurricanes, since they expose the upper floors to far stronger winds than the lower levels, in some cases by a whole Saffir-Simpson category difference, meaning that top floors could experience a Category 5 storm while lower levels see Category 4 wind speeds.

“Given that the region from the I-4 Corridor (Tampa & Orlando) to Miami has seen more than one million new properties in less than two decades highlights that there is simply more risk of things being damaged,” Bowen said in a Twitter message.

“There are further concerns that many residents in this part of the state are new and have never experienced a major hurricane before,” he said.

“The sad reality is that increased exposure, increased wealth and major hurricane strength storms are a bad combination — and leads to a likelihood of greater future losses.”

According to Climate Central, a nonprofit climate research and communications group, 85,000 people in Miami-Dade County alone live below 3 feet above sea level. That area includes a whopping \$22 billion in property. To put this in context, in 2005, county recorded a flood that reached 5.8 feet above sea level. And a storm surge from Hurricane Irma could conceivably produce a flood far higher than that.

In a report released in 2016, Climate Central found that Miami-Dade County has already seen about 5 inches of sea level rise during the past 34 years, which means storm surges have a higher floor to launch from, like a basketball player dunking a ball from a rising court.

Florida as a whole is ground zero for America’s coming reckoning with sea level

rise and repetitive, astronomically expensive coastal flood disasters.

“Irma looks like it could be a human-made catastrophe in many dimensions,” said Ben Strauss, vice president for sea level rise and climate impacts at Climate Central. “We have built a great metropolitan region in the middle of a hurricane high risk and flood zone, and have been continued to build it up even as sea levels rise because of human activity.”

“At the same time,” he said, “climate change is pointing us to more intense hurricanes.”

Climate Central’s research has shown that across Florida a staggering \$145 billion in property value, and 300,000 homes, sits on land that’s less than 3 feet above sea level. This jumps to \$544 billion and 1.4 million homes constructed on land under 6 feet. Storm surge flooding could easily exceed these heights above normal tide levels.

Broader East Coast Threat

Hurricane Irma is also a growing threat to the rest of the Florida coastline, particularly the east coast, as well as coastal Georgia and the Carolinas. In some ways, recent computer model guidance shows a track resembling Hurricane Matthew, which never made landfall in Florida last year, but damaged Cape Canaveral and areas near Jacksonville as the storm’s eye wall, where a hurricane’s highest winds are located, wobbled ashore.

Had the center of that storm moved about 30 miles to the west, the damage would have been far more severe. It’s unclear if Florida will get lucky a second year in a row, however.

The storm is currently projected to move into northeastern coastal Georgia and southern South Carolina by early next week. These areas are also vulnerable to storm surge flooding, which is exacerbated by sea level rise. Savannah, Georgia, in particular is susceptible to such a hazard, as is Charleston, South Carolina.

However, according to Strauss, Miami stands out for its damage potential from Hurricane Irma.

“Every low-lying coastal city on the US Gulf and Atlantic coasts is in its own way vulnerable. What really distinguishes South Florida is its really high concentration

of population and economic activity and value. We're pouring resources into a place that faces significant annual risks from hurricanes today, and significant long-term risks from sea level rise."

Sea level rise is not a distant threat for Charleston and Miami. It has already caused both cities to regularly experience coastal flooding on fair weather days during astronomically high tides.

However, Hurricane Irma will be anything but a fair weather day.

Source: http://mashable.com/2017/09/07/hurricane-irma-worst-nightmare-for-miami-charleston/#dOy_uH.12EqF

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