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LINDA FOUN - SEP 20, 2017

## **A UN report warns extreme weather events that historically happened about once in 100 years could hit coastal cities yearly by 2050. Cities need to prepare now.**

In a rapidly warming world, extreme storms that typically occur once per century could hit the world's coastal cities at least once per year by 2050. By that time, more than 1 billion people are projected to live in the low-lying areas that will be in the path of those storms.

That's just one of the alarming findings in a [special report](#) on the world's oceans and frozen areas, released Wednesday by climate scientists at the United Nations. Citing over 7,000 publications, more than 100 scientists at the Intergovernmental Panel on Climate Change warned in the report that the global sea level is rising more rapidly than expected.

While sea levels rose by some 15 centimeters during the 20th century, they're now rising twice as fast, at 3.6 millimeters each year. By 2100, according to the report, seas could be two feet higher even if greenhouse gas emissions are reduced and global warming is limited to 2 degrees Celsius. In the worst-case scenario, in which the world fails to cut fossil fuel emissions, that figure jumps to more than 3.5 feet.

That means coastal cities and islands will see their neighborhoods inundated with water more often. Nuisance floods that occur during high tides will increase, resulting in more disruption to daily life. And the catastrophic flooding that results when rising seas mix with heavy rainfall will be more frequent and more severe.

"The timescale [for major storms] is changing dramatically, and may become irrelevant in categorizing storms," says Mandy Ikert, who wasn't involved with the report but heads the adaptation initiative at C40, a coalition of 94 cities tackling climate change. "Copenhagen ... has experienced, over a four-year period, a 1-in-1,000 year storm, followed by a 1-in-200 year storm, followed by a 1-in-500 year storm."

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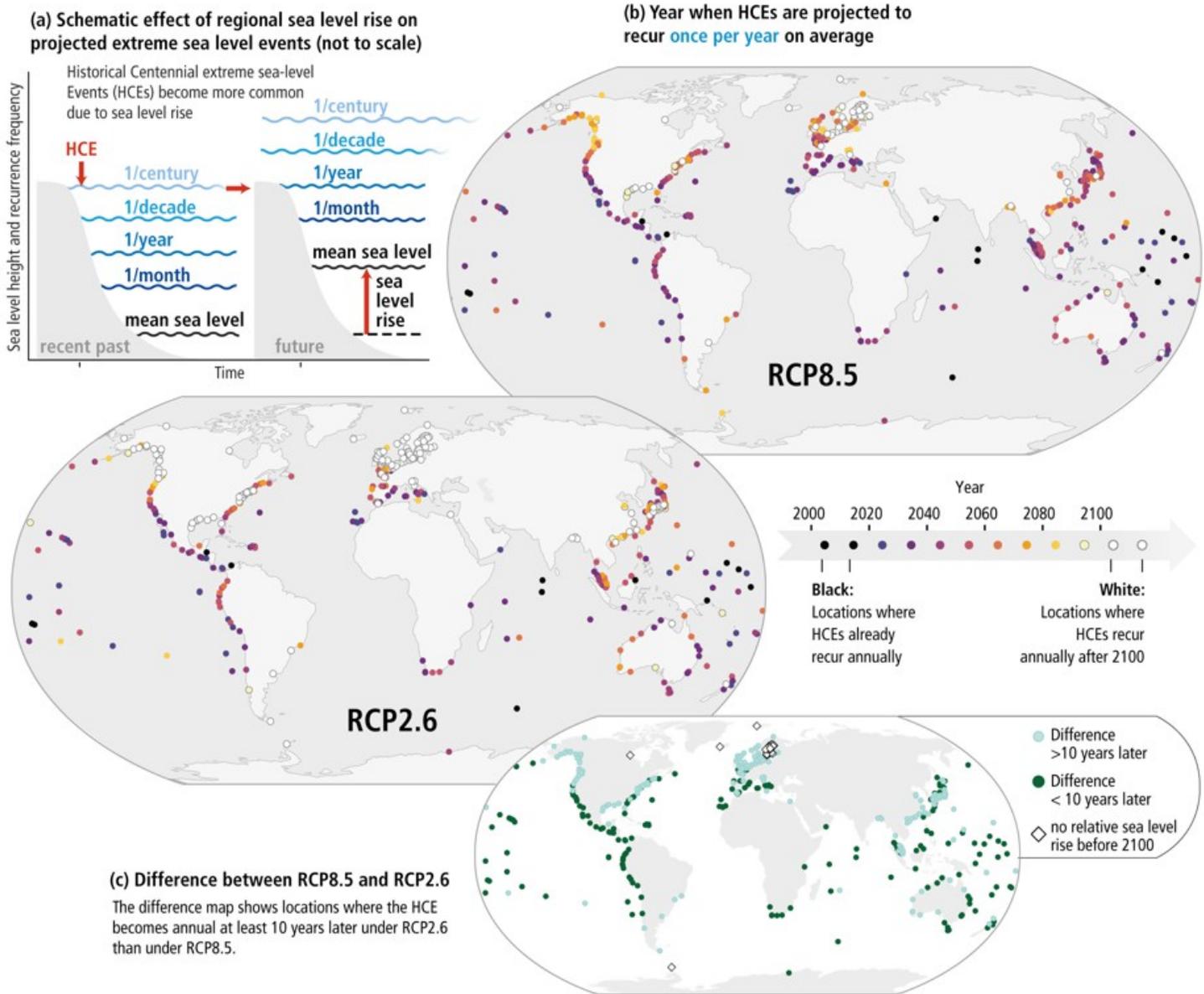
**"We're not going back to normal—whatever normal once was."**

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According to the report, some islands in the Pacific and Indian oceans, as well as coastal cities in the Caribbean, are already seeing local sea levels rise each year to heights that used to be seen about once per century. In the best case scenario, in which global warming is limited to around 1.5 degrees, some cities along both the U.S. East and West coasts could see similar trends as early as 2035.

## Extreme sea level events

Due to projected global mean sea level (GMSL) rise, local sea levels that historically occurred once per century (historical centennial events, HCEs) are projected to become at least annual events at most locations during the 21st century. The height of a HCE varies widely, and depending on the level of exposure can already cause severe impacts. Impacts can continue to increase with rising frequency of HCEs.



Each dot correlates with the year that cities will likely see historically centennial sea levels recur every year. RCP 2.6 is the best case scenario and 8.5 is the worst, though the difference is often just 10 years. (IPCC)

The UN report comes as more than 60 world leaders gathered in New York this week for the UN Climate Action Summit, making promises to fight greenhouse gas emissions. It also comes on the heels of one of the largest environmental protests across the world led by young activists like Sweden’s Greta Thunberg, who on Monday chided leaders at the summit for turning away from the climate crisis in pursuit of “fairy tales of eternal economic growth.”

“This is a wake-up call that we still need to do more to mitigate as much [climate impact] as possible,” Ikert says. “We’re not going back to normal—whatever normal once was.”

While the projections from the report may be hard to grasp, they're even harder to ignore. Aside from alarming statistics, the report outlines the costs and benefits of a range of flood-mitigation and adaptation strategies that cities can implement (and some already have) to protect vulnerable communities.

In recent years, places in Texas and Maryland have illustrated just how serious these more-frequent catastrophic storms can be for communities. The Houston area suffered major flooding from Tropical Storm Imelda earlier this month and from Hurricane Harvey in 2017. And as CityLab reported, Ellicott City, Maryland, experienced two 1-in-1,000 year events that came just two years apart. In both cases, communities were barely recovering from the first storms when the second ones hit, prompting their local government to take a more serious look at how to adapt for the future.

Cities facing sea-level rise of the future will most likely have to do more than flood-proof buildings and install warning systems, measures that are often considered low-hanging fruit. They will also have to consider "hard protections," like building dikes, surge barriers, and seawalls—something that Charleston, South Carolina, has continued to improve on, for example. (The city was recently spared from the worst of Hurricane Dorian.) The authors caution that such investments may be out of reach for communities in developing nations that have fewer resources.

Ikert says that's why reports like this one are important: They help rally support from larger nations and financial institutions for protecting all cities from the effects of climate change. "What we're hoping is that the international community can support these cities that don't have the financial capacity today," she says.

Other measures worth considering include conserving and restoring the ecosystem, which the authors note will also improve water quality and curb the amount of carbon released into the atmosphere. In Texas, more lawmakers are considering the role that green infrastructure—like prairies and sand dunes—can play in controlling flood waters when combined with traditional "gray" infrastructure.

In some cases, mitigation and adaptation won't be enough. And cities will have to retreat and relocate entire communities, though the report notes that such drastic moves will be mired in complex humanitarian challenges.

However cities choose to respond, the report calls for careful decision analysis, land-use planning, and public participation. "The more decisively and the earlier we act, the more able we will be to address unavoidable changes," Debra Roberts, co-chair of the working group that put the report together, said in a statement.