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King tide flooding a preview of the daily norm we can expect

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LANE TURNER/GLOBE STAFF

Lynda DeBiccari waded in the rising waters during the king tides Tuesday at the Long Wharf in Boston.

By Matt Rocheleau

GLOBE STAFF NOVEMBER 17, 2016

Did the king tides give us a glimpse into the future?

The flooding caused recently by the tides in coastal communities around the world, [including here](#) in [Massachusetts](#), may be far more normal in just a few decades, thanks to climate change.

Experts warn that eventually sea levels will have risen to the point where such flooding will be routine.

“King tides preview how sea level rise will affect coastal places,” the Environmental Protection Agency [says](#). “As time goes by, the water level reached now during a king tide will be the water level reached at high tide on an average day.

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“Sea level rise will make today’s king tides become the future’s everyday tides,” the agency says.



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ancient ways that are most at risk.

King tides are caused by gravity that pulls oceans to their highest levels when the earth, moon, and sun are in a particular alignment.

[Researchers](#) have [already](#) found a [sharp increase](#) in coastal high tide flooding, also known as “nuisance” or “sunny-day” flooding, around the United States over the last century, particularly since the 1980s. They say climate change is to blame.

The EPA says that tides “are reaching higher and extending further inland than in the past.”

“As sea level is rising, it requires less of a high tide or less of a storm to cause flooding,” said Rutgers University climate scientist Robert E. Kopp.

Scientists, including Kopp, have studied how the world’s oceans have risen significantly in recent decades, and at a [far faster pace](#) than in preceding centuries, as the planet has warmed to record levels.

Researchers have said they expect sea level rises in our region to continue to outpace other parts of the world. And a [report](#) earlier this year said the impact of climate change on Boston will be far more calamitous than previous studies have suggested.

Scientists say that harmful greenhouse gas emissions by humans have fueled the rising temperatures and sea level rise.

William Sweet, an oceanographer at the National Oceanic and Atmospheric Administration, in a [study](#) published in late 2014, projected that a majority of coastal areas in the United States can expect to experience 30 or more days of nuisance flooding annually by 2050.



That analysis featured projections for specific cities, including Boston.

Sweet said Wednesday that even if humans are able to curb greenhouse gas emissions moderately, his analysis estimates that Boston can expect to endure about 50 days of nuisance flooding each year by 2050.

Under a scenario where humans fail to curb emissions in any significant way, Boston could expect as many as 120 days of nuisance flooding annually.

Some [initiatives](#) have been [launched](#) to document the impact of king tides, including through [photographs](#) of the flooding they cause, as a way to raise awareness for the predicted effect of climate change.

Kopp said that along with more minor cases of flooding, major flooding will also become more common.

For example, he said, research shows that floods that were considered one-in-100-year events as of 2000 will be about two and a half times more likely by 2030 and nearly nine times more likely by 2050, under a scenario in which greenhouse gas emissions are at relatively moderate levels.


If emissions are at high levels, such major floods would be even more frequent, he said.

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