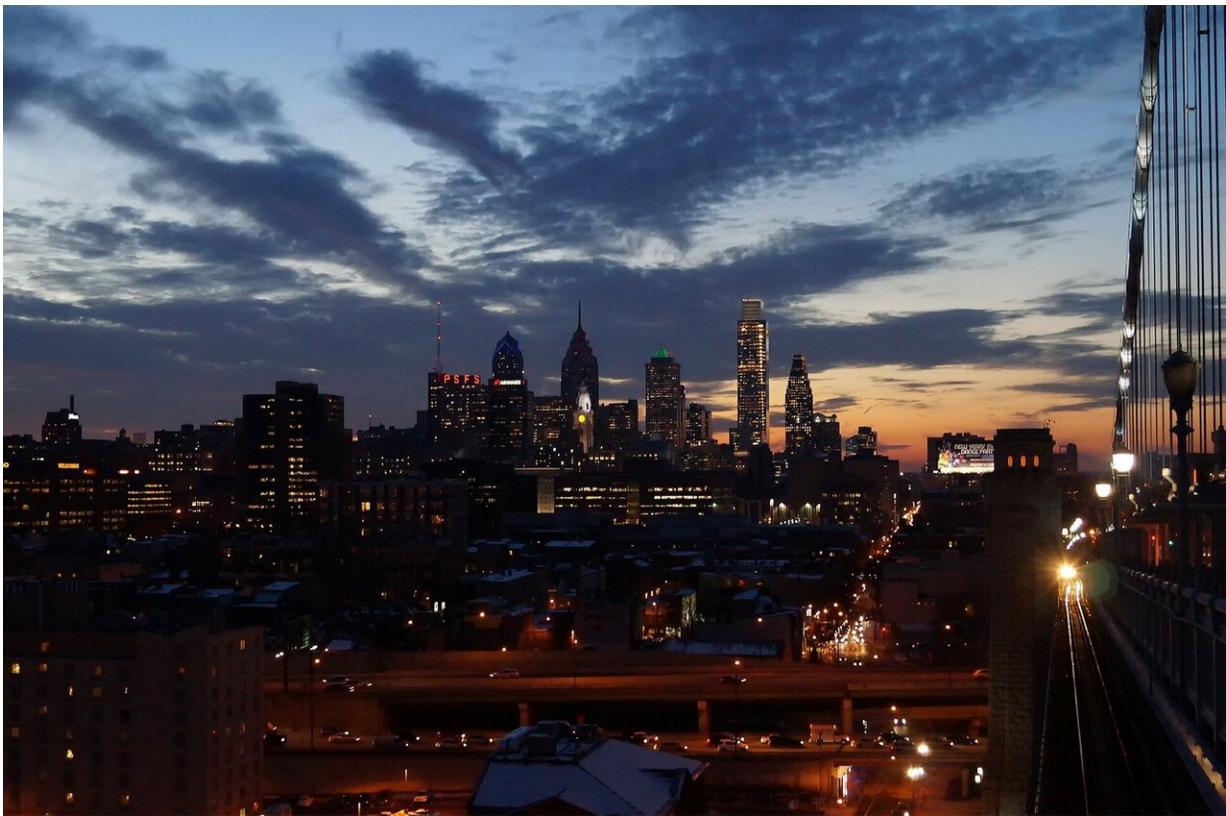


# Philly will have more heat waves, and the Delaware projected to rise more than a foot over the next 25 years

May 25 2023, by Frank Kummer

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The Delaware River could rise well more than a foot by midcentury, and temperatures could heat up nearly 6 degrees, accompanied by a rise in

extreme heat days, according to a new report that localized data to create a snapshot of local climate change in Philadelphia.

The report came from a coalition formed in response to rallies and a petition by Drexel University students in 2019 imploring the school to take action on [climate change](#).

After the student action, representatives from the city of Philadelphia, Drexel University, the Delaware Valley Regional Planning Commission, and the Academy of Natural Sciences of Drexel University formed the Climate Resilience Research Agenda. The group released a report on the potential impacts of [climate](#) change Wednesday during Green Building United's annual sustainability symposium, which was held this year at Drexel.

Some areas will be impacted more than others, said Franco Montalto, a Drexel engineering professor who coedited the report. For example, communities such as Philadelphia's Eastwick section are already vulnerable to flooding. Other parts of the city are more affected by [heat waves](#).

Montalto said changing patterns could also impact the urban forest, wetlands, and floodplains.

"The groups raised a bunch of questions about the built environment, about transportation systems about [energy systems](#), buildings, and what we need to know to make those systems continue to function despite climate change," he said.

The city is already seeing an increase in precipitation, the report noted, and six of the 10 wettest years on record have occurred since 1990. Average annual precipitation has increased over the last century, and variability of amounts has become more pronounced.

For the report, the Consortium for Climate Risk in the Urban Northeast extrapolated climate modeling data compiled by the Intergovernmental Panel on Climate Change to form local models. The United Nations panel has been compiling climate change data for more than 30 years. It released its sixth assessment last year with updated data.

Projections call for an increase of 5% to 12% in precipitation by the 2050s, using a baseline period of 1981 to 2010. Precipitation is expected increase by 8% to 16% by the 2080s. Rangers could be higher or lower depending on whether [carbon emissions](#) increase, decrease, or stay the same.

The report acknowledges that the frequency and intensity of rainstorms are harder to project. But they noted the big impact of Hurricane Isaias that walloped Southwest Philadelphia in August 2020 and the remnants of Hurricane Ida that flooded the Vine Street Expressway when the Schuylkill overflowed its banks in September 2021.

The tidal Delaware River, which reaches to Trenton, rose at the rate of about 1.2 inches per decade over the last century. The trend is expected to continue with [sea level](#) projected to rise in Philadelphia anywhere in a low to high range of 7 to 11 inches by the 2030s, 14 to 19 inches by the 2050s, and 24 to 38 inches by the 2080s.

The increases would likely cause more high-tide flooding even when there is no rain.

The high-end estimate for [sea level rise](#) by the 2080s is 45 inches, according to the report, and, by 2100, could rise much as 64 inches.

"As the sea level in the Delaware River Estuary continues to rise, it will also push salty and brackish water upriver causing impacts to ecosystems and water treatment facilities designed to only accommodate fresh

water," the report states.

Philadelphia draws all of its drinking water from its two freshwater rivers: the Schuylkill and Delaware. The Baxter treatment plant is on the Delaware River in Philly's Torresdale section. The current salt front is just below Wilmington. The highest on record occurred during a drought in the 1960s when the salt line encroached roughly parallel to Camden.

Using weather observed at Philadelphia International Airport, 8 of the 10 hottest years on record have occurred since 2000, according to the report.

Further, average annual temperatures are projected to increase in the middle range by 4.1 to 5.8 degrees by the 2050s, and by 5.5 to 9.4 degrees by the 2080s.

Over the same period, the frequency and intensity of hot days and heat waves is also projected to increase. For example, by the 2050s, the numbers of days with maximum temperatures at or above 95, which currently happens about 6 days a year, are projected to grow to 21 to 34 days by the 2050s.

The frequency of heat waves, defined as three or more consecutive days with maximum temperatures at or above 90 degrees, may triple by the end of the century. Currently, there are on average three heat waves a year. That could grow to nine.

The Climate Resilience Research Agenda team is made up of 100 people, half of whom are academics and others from government, nonprofits, and [community groups](#), Montalto said.

"We asked them to deliberate about what knowledge gaps keep this region from being able to thrive as climate changes," Montalto said.

"The idea was that it's not just about how to reduce emissions or deal with sea level rise. But it was about the broader set of things that come together."

Subgroups began hashing out questions including the impact on water, air quality, human health, and the environment. Montalto said the groups also delved into how climate change will impact buildings, [transportation systems](#), and infrastructure.

The [report](#) is "only a first step," Montalto said.

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Citation: Philly will have more heat waves, and the Delaware projected to rise more than a foot over the next 25 years (2023, May 25) retrieved 10 May 2024 from <https://phys.org/news/2023-05-philly-delaware-foot-years.html>

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