



# High Tide Flooding: Mid-Atlantic Region Fact Sheet

NOAA's Center for Operational Oceanographic Products and Services

## ABOUT US

NOAA's Center for Operational Oceanographic Products and Services (CO-OPS), part of the National Ocean Service (NOS), is the U.S. authoritative source for accurate, reliable, and timely data on tides, currents, maritime navigation, coastal inundation, and sea level trends. Using data collected by a national network of sensors, CO-OPS produces free online tools and analyses to help coastal and maritime transportation communities better understand and plan for changing ocean conditions.

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High tide flooding inundates a residential area in Myrtle Beach, SC.

Photo credit: Cynthia A. Rains, [MyCoast](https://mycoast.com), 01/05/22.

## BACKGROUND

### What is high tide flooding?

**High tide flooding** is defined as the overflow or excess accumulation of water that covers typically dry coastal land during high tide. It usually occurs when water levels reach anywhere from 1 to 2 feet above the daily average high tide, depending on location. It can occur in the absence of severe weather conditions, and may lead to more severe flooding if above normal tides coincide with heavy rain, strong winds or waves. High tide flooding can cause many impacts such as road closures, overflowing storm drains, and longer commute times.

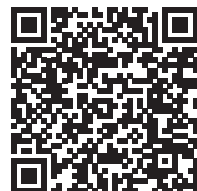
### The connection between high tide flooding and sea level rise

As relative sea levels continue to rise along most U.S. coastlines, high tide flooding is occurring more frequently and it no longer takes a storm to cause disruptive flooding at the coast. Over time, more frequent high tide flooding will cause more severe impacts like damaging critical infrastructure, flooding roadways, and degrading coastal ecosystems. **By 2050, high tide flooding on a national scale is expected to occur 55-85 days per year on average, a 200% increase since the year 2000.**

### NOAA's high tide flooding product suite:

To help coastal communities plan for and mitigate flooding impacts, NOAA experts predict when, where, and how often high tide flooding may occur. NOAA provides this information through its suite of high tide flooding products, which includes its Monthly and Annual High Tide Flooding Outlooks. Together, these Outlooks can help coastal communities prepare for high tide flooding in the near- and long-term.

#### Annual High Tide Flooding Outlook



See how many high tide flood days to expect over the next year and into the future.

#### Monthly High Tide Flooding Outlook



View the daily likelihood of high tide flooding for specific locations within your region.

Visit our product suite at: [tidesandcurrents.noaa.gov/high-tide-flooding/](https://tidesandcurrents.noaa.gov/high-tide-flooding/)

## NATIONAL OVERVIEW

### 2022 SUMMARY

Last year, coastal communities across the Nation experienced an average of **4 high tide flood days**. The NOAA station that had the highest number of flood days was [Bar Harbor, ME](#), with 16 days recorded. The Mid-Atlantic and Pacific Northwest regions observed the most high tide flood days, both with 8 days on average.

### 2023 OUTLOOK

The Nation continues to experience rapid increases in high tide flooding due to the long-term effects of sea level rise. **NOAA predicts 4 to 9 high tide flood days for the Nation over the 2023 meteorological year (April 2023 to May 2024)**. This year, due to the expected [El Niño](#) some tide gauge locations on the East and West Coasts are predicted to experience more flooding as a result.

# Mid-Atlantic Outlook

*New York (from the Battery, NY), New Jersey, Delaware, Maryland, Washington D.C., and Virginia*

## OVERVIEW

The Mid-Atlantic continues to experience rapid increases in high tide flooding due to the long-term effects of high rates of relative [sea level rise](#), primarily due to [land subsidence](#), [global sea level rise](#), and regional oceanographic effects.

## 2022 SUMMARY

Last year, the Mid-Atlantic experienced **8 flood days on average**. The NOAA station with the highest number of flood days was [Wachapreague, VA](#), with 12 days recorded.

## 2023 OUTLOOK

This year, the Mid-Atlantic is predicted to experience **between 9 and 14 high tide flood days**, a 300% increase in flood days since the year 2000. The region is predicted to experience some of the most frequent high tide flooding in the Nation, due to the effects of [El Niño](#) conditions, which contribute to increased storm activity in the region. NOAA's station in [Sewells Point, VA](#), is expected to experience the highest number of high tide flood days in this region, with 19 days predicted.



*Cars drive through flooding caused by a simultaneous above normal high tide and new moon that coincided with heavy rain and onshore winds. Location: Long Neck Road between Rehoboth Bay & Indian River Bay, Millsboro, DE.*

Photo credit: Driscoll Drones, 2/25/2020.

## What contributes to coastal flooding in the region?

The Mid-Atlantic is routinely impacted by flooding throughout the year due to its low-lying coastal lands, wide and shallow continental shelf, and exposure to coastal storms. Coastal flooding in this region is predominantly weather driven, including both tropical systems coming up the coast from the south, and non-tropical offshore storms bringing winds and ocean currents from the east and northeast.

## When will the highest number of stations in the region be at risk of high tide flooding?

In the Mid-Atlantic, the highest number of stations are likely to experience high tide flooding during **September and October 2023**. The region will have a risk of high tide flooding during these months because perigean spring tides will occur during the full moons. Mean sea levels are also generally higher in the early fall months due to warmer, expanding ocean water and changes in weather patterns, further increasing the likelihood of high tide flooding.

Visit the [Monthly High Tide Flooding Outlook](#) to see what days specific locations in the region are more likely to experience high tide flooding. As potential flooding days grow closer, visit the [Coastal Inundation Dashboard](#) to monitor water levels in real-time.

## What kind of impacts might I expect?

Low-lying areas may flood, but more severe flooding and coastal erosion may occur if high tide flooding coincides with a storm. Some locations along the Mid-Atlantic coast will have their highest tides of the year and lower than normal tides will also occur. High tide flooding may lead to temporary business closures, overflowing storm drains, and longer commute times.

## HIGH TIDE FLOODING IN THE FUTURE

Over the coming decades, the frequency of high tide flooding is expected to accelerate due to sea level rise. For example, the projected likely decadal range of high tide flood days for [Annapolis, MD](#) is 75 – 115 days per year on average. Visit the [Annual High Tide Flooding Outlook](#) to view decadal high tide flooding projections out to 2050 under different sea level rise scenarios for other locations in your region.

View the [2022 multi-agency Sea Level Rise Technical Report](#) to learn more about the different sea level rise scenarios and the [companion application guide](#) to understand how to use the information to best support your local sea level rise planning and adaptation decisions.