24TH ANNUAL

STATE OF THE SHORE

Media Event Asbury Park May 21, 2026

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The Jersey Shore is waking up as boardwalks fill with the scent of fries and funnel cake, lifeguard stands line the beach, and bikes roll through coastal towns. After a winter that brought only limited storm impacts to much of the coastline, New Jersey's beaches are entering the 2026 season in strong shape, with beach nourishment and dune protection projects continuing to strengthen vulnerable areas. While forecasters predict a near-to-slightly below-average Atlantic hurricane season, coastal experts continue to stress the importance of staying informed and prepared throughout the summer months. Remember to swim safely; keep an eye out for rip currents and always follow lifeguard instructions. For now, though, the Shore is ready, and millions of residents and visitors are gearing up for another season of memories along New Jersey's coast.

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State of the Shore Report

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This summer, New Jersey's beaches will benefit from an extremely mild winter storm season that has left many of them in good shape heading into the Memorial Day weekend. Traditionally, New Jersey's shoreline is shaped by two types of coastal storms. The first are major events such as Superstorm Sandy and Winter Storm Jonas. The second type are the more frequent, smaller storms that while individually don't generate significant amounts of erosion, cumulatively can dramatically alter the coast. While the first type gets most of the attention, the second type can dramatically weaken the beach/dune system leaving it more vulnerable to these large events. The storms this past winter fall into this second category, so while the beaches largely made it through the winter without dramatic erosion (save for a few specific locations), even small amounts of erosion increase the long-term vulnerability of the beaches. During these quiet times, more than ever, it is important to remain committed to programs like the Shore Protection Fund that help ensure the long-term viability and vitality of our coastal communities.

Coastal Flooding

In terms of coastal flooding, this past winter was relatively mild. While overall coastal water levels were generally above the long-term seasonal average, the number of events exceeding established National Weather Service (NWS) flood thresholds was limited (Table 1). The NWS defines site-specific minor, moderate, and major flooding thresholds based on expected local impacts. Early in the season, late-summer seasonal high water levels, superimposed positive sea-level anomalies, and persistent onshore wind forcing, all acting on a steadily rising long-term baseline resulted in elevated water levels along the entire New Jersey coast through much of September and October. The prolonged early-fall elevation in coastal water levels dissipated in early November as the Mid-Atlantic transitioned out of the seasonal sea-level maximum, the persistent onshore winds broke down, and regional positive sea-level anomalies decayed. In February, water levels increased again due to a combination of higher astronomical tides, persistent low atmospheric pressure, and seasonal wind patterns favoring onshore setup. This pattern began to dissipate in March, bringing water levels down for the remainder of the winter. Stevens evaluated specific storm events by reviewing the NOAA coastal water level records from Atlantic City and Sandy Hook (https://tidesandcurrents.noaa.gov).

Early in the season, coastal water levels at Atlantic City (Figure 1) were elevated as described above, leading to four events exceeding the minor flood threshold of 6.0 ft above Mean lower Low Water (MLLW) in September and October. The highest water level (6.7 ft MLLW) and largest storm surge (2.6 ft) was measured during a prolonged nor'easter that took place from October 10–14. The elevated water levels were driven by sustained northeast winds, low atmospheric pressure, and unfavorable tidal phasing that led to multiple high-tide inundation cycles, road closures, and emergency response actions. Beginning in November and continuing through January, the Atlantic City gauge only recorded a handful of small storms, with only four exceeding the minor flood threshold. The largest of these was associated with a fast-moving winter coastal low that coincided with a new moon perigean spring tide on December 19th. Water levels peaked at 6.6 ft MLLW; however, they dropped rapidly as the winds shifted direction as the storm passed. February saw a return to the pattern of elevated water levels that was recorded earlier in the season. In early February, perigean spring tides (extra high tides caused when the moon is at it's closest point to the earth) coinciding with below-average atmospheric pressure and weak onshore flow, produced a short-lived but noticeable elevation in coastal water levels, which again reached 6.7 ft MLLW, despite the absence of a significant storm. The last major high-water event for the season was recorded in mid-February and was associated with the Blizzard of 2026. During the event, water levels rose to 6.6 ft MLLW due to the combined effects of sustained northeast winds and extreme low pressure, which generated a storm surge of 2.8 ft. The surge coinciding with near high tide conditions, during a period of elevated water levels, worsened the impact of the event.

The tide gauge data at Sandy Hook (Figure 2) was generally very consistent with the gauge in Atlantic City. The pattern of elevated water levels early in the season, followed by a return to normal between November and January, before an uptick in February was also recorded at Sandy Hook. At Sandy Hook, four events in September/October exceeded the minor flood threshold of 6.7 ft MLLW, with two approaching the moderate flood threshold of 7.7 ft MLLW. During the Nor'easter in mid-October, water levels at Sandy Hook peaked at 7.63 ft MLLW, which was the highest recorded this past winter. In some sense this was fortunate as the peak storm surge of 3.73 ft occurred close to low tide, reducing the flooding impacts. The only other event to approach the minor flood threshold in October occurred near the end of the month and was associated with a moderate coastal storm whose prolonged northeast winds coincided with elevated background sea levels and spring-like tides, producing sustained water-level setup and repeated tidal flooding despite the absence of an extreme surge event. Even in the absence of a storm, water levels reached 7.57 ft MLLW, emphasizing the importance of non-storm processes to coastal flooding. The period from November through January was extraordinarily calm, with only two events reaching the minor flood threshold at Sandy Hook. Consistent with what was measured at Atlantic City, water levels trended upwards in February, peaking during the 2026 Blizzard. At Sandy Hook, the water levels peaked at 7.2 ft MLLW, with a maximum surge of 3.72 ft during the storm.

A phenomenon of note that has continued through this past winter is that peak coastal water levels have often been driven by modest to moderate storms occurring during periods when the background water levels were elevated, meaning the most intense storms did not always produce the highest water levels.

The consistent high-water levels recorded in September and October at both gauges largely in the absence of a significant storm (the October Nor'easter is the exception) highlights the importance of non-storm processes in coastal flooding.

Coastal Erosion

While coastal erosion is more common during periods of coastal flooding, there are additional factors that determine the amount of erosion that occurs during a storm. The three factors that are typically associated with erosion are elevated water levels (flooding), elevated wave heights, and storm duration. Elevated water levels provide the platform on which waves capable of chewing up the beach ride, while the storm duration regulates how much time the waves spend attacking the beach. The impacts of coastal erosion can range from small and temporary to dramatic and long lasting. To more accurately assess erosional impacts, Stevens supplements the tide gauge data with wave observations recorded and maintained by NOAA as part of their National Data Bouy Center (NDBC) (https://www.ndbc.noaa.gov/). Overall, the wave heights measured off the New Jersey coast this past winter were smaller than usual.

Waves measured at NOAA buoy 44065 near the entrance to New York Harbor are shown in Figure 3. Only six storms breached the 10-foot threshold which is commonly used to define small to moderate storms. The largest waves of the season were measured during the mid-October Nor' Easter (14.8 ft) and the February blizzard (14.2 ft). The October storm was notable because the waves persisted over several tidal cycles, elevating water levels along the coast and contributing to coastal erosion. Further south, the wave gauge off the coast of Barnegat (NDBC buoy 44091) recorded consistently higher waves throughout the winter. This is not uncommon, as the shadow of Long Island generally reduces wave heights along the northern New Jersey coast associated with Nor'easters. The Barnegat gauge recorded nine storms with wave heights in excess of 10 ft and two during which the waves reached more than 15 ft. The largest waves were recorded during the February blizzard, peaking at 18.6 ft, and during October Nor'easter, when they reached 16.9 ft. Other large wave events measured by the Barnegat gauge were associated with the late October coastal storm (12.0 ft), the fast-moving coastal low on December 19th (13.0 ft), and late January Nor'easter (13.6 ft).

In comparison to previous winters this past year was relatively mild from a coastal erosion standpoint. The net impact is that costal erosion was limited to what can be called nuisance events. Nuisance events are low impact, high frequency events that when considered individually only cause minimal damage, but when

Table 1: Flood threshold exceedances at Atlantic City.

	Flooding Days			Flooding Hours		
Season	Minor	Moderate	Major	Minor	Moderate	Major
2015–2016	12	5	0	48	10	0
2016–2017	14	1	0	41	1	0
2017–2018	25	2	0	78	3	0
2018–2019	16	1	0	34	3	0
2019–2020	23	3	0	60	5	0
2020–2021	23	2	0	56	5	0
2021–2022	18	1	0	50	1	0
2022–2023	23	2	0	50	3	0
2023–2024	43	3	0	109	3	0
2024–2025	22	1	0	62	1	0
2025–2026	20	0	0	33	0	0

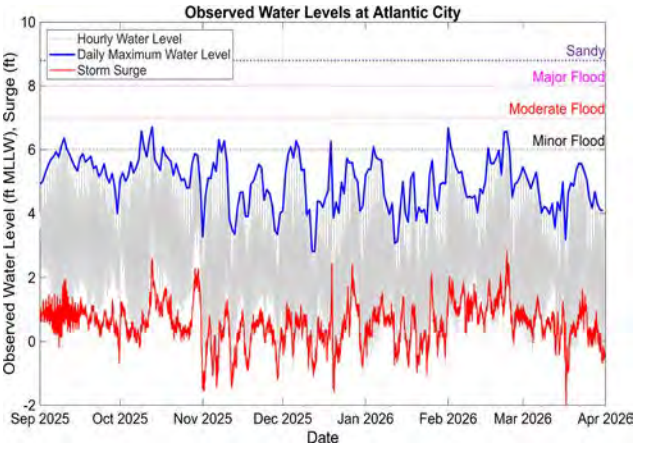

Figure 1: Winter 2025-26 water levels measured at Atlantic City.

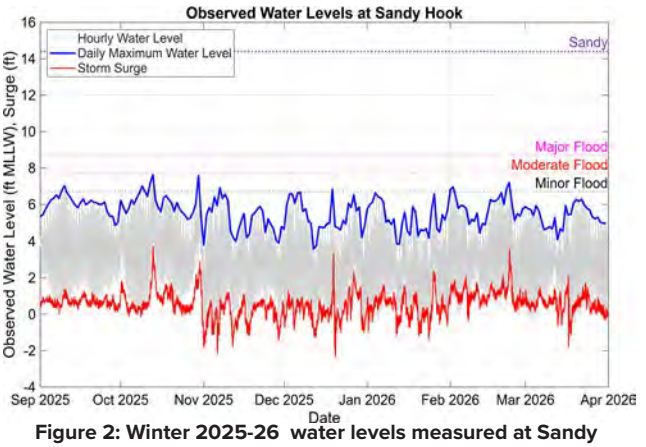

Figure 2: Winter 2025-26 water levels measured at Sandy Hook.

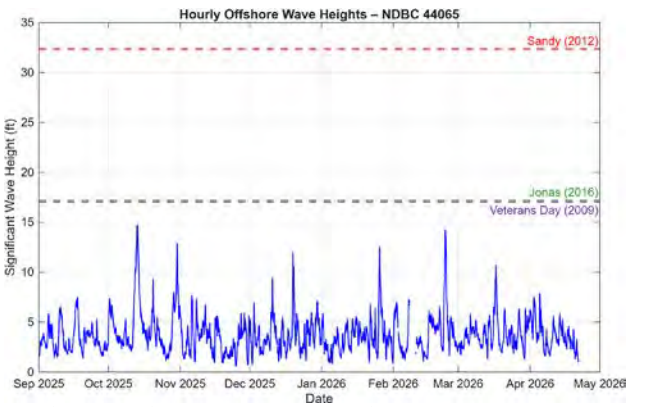

Figure 3: Winter 2024-25 wave heights measured off New York Harbor.

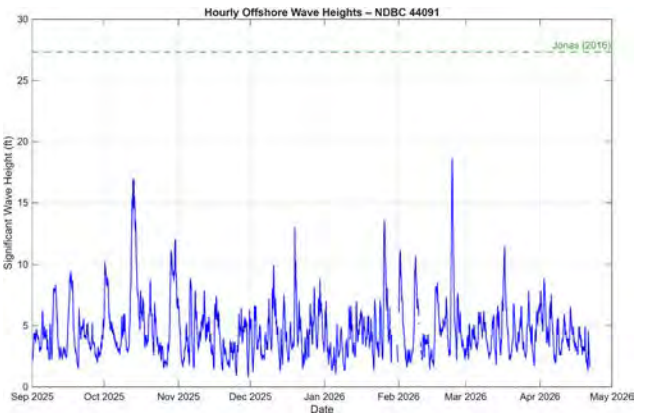

Figure 4: Winter 2025-26 wave heights measured off Barnegat Bay.

considered cumulatively can have more dramatic impacts. Stevens is developing a coastal erosion forecasting tool for the state of New Jersey that takes into account the three main drivers of coastal erosion (elevated waves and water levels, and storm duration). This winter, the system was only activated three times. The first time was in advance of the mid-October Nor'easter. Storm erosion forecasts were generally consistent with the NJDEP post-storm reconnaissance reports which documented minor-moderate erosion throughout the state with isolated pockets of major erosion. The second time was in advance of the late January Nor'easter. This storm fizzled out fairly quickly and only produced minimal forecasted/observed erosion. The third and last time was in advance of the February 2026 blizzard, where early forecasts suggested significant statewide impacts driven by extreme water levels and wave heights. Had the early forecasts held, statewide erosion would have been similar to that experienced during winter storm Jonas, which is widely regarded as the most destructive storm since Sandy. Fortunately, as the storm approached, it took a favorable turn, significantly reducing the forecasted impacts. Again, NJDEP storm reports were largely consistent with the final forecasts, documenting minor to moderate erosion throughout much of the state, with only isolated pockets of major erosion. Stevens is currently endeavoring to improve the forecasts by working with state and select communities to document the condition of the beach immediately before and after storms.

Tropical Outlook

The 2026 Atlantic hurricane season, which runs from June 1 to November 30, is expected to be slightly below average in overall activity (Table 2), according to early-season forecasts. The widely cited Colorado State University (CSU) April outlook projects 13 named storms, six hurricanes, and two major hurricanes (Category 3 or higher), values that are modestly below the 1991–2020 climatological averages of 14.4 named storms, 7.2 hurricanes, and 3.2 major hurricanes. AccuWeather similarly anticipates a near- to below-average season, forecasting 11 to 16 named storms, with about 6 to 8 hurricanes and 2 to 4 major hurricanes, while cautioning that several storms could still make U.S. landfall despite the lower basin-wide totals. In contrast, the University of Arizona early April forecast suggests activity could trend above average, projecting around 20 named storms, nine hurricanes, and four to five major hurricanes, highlighting ongoing uncertainty typical of long-range outlooks issued before summer climate patterns fully emerge.

Table 2: Comparison of early season hurricane forecasts.

	Named Storms	Hurricanes	Major Hurricanes
Colorado State University	13	6	2
University of Arizona	20	9	4-5
Accuweather	11-16	6-8	2-4
Historical Average	14.4	7.2	3.2

The primary factor suppressing projected 2026 activity is the anticipated development of El Niño conditions during the summer and peak hurricane months, which typically increase vertical wind shear across the Atlantic basin and inhibit storm formation. Although sea surface temperatures remain warmer than normal in the western Atlantic, conditions are closer to or slightly below average in the eastern and central tropical Atlantic, resulting in a mixed but generally less favorable environment for sustained storm development.

For the Mid-Atlantic region and New Jersey, early probabilistic guidance indicates below-average risk compared with many recent seasons. CSU estimates roughly a 16% chance of at least one named storm passing within 50 miles of New Jersey, a 5% chance of a hurricane, and less than a 1% chance of a major hurricane, all lower than long-term averages for the region. While these probabilities suggest reduced likelihood of direct impacts, officials emphasize that a single storm can still produce severe and widespread consequences. Hurricane Ida remains a stark reminder: although it weakened to a tropical depression before reaching New Jersey in 2021, it caused catastrophic flooding, billions of dollars in damage, and 30 fatalities across the state. Consequently, New Jersey residents are urged to remain vigilant, follow guidance from the National Weather Service and state and local officials, and review preparedness resources available through the New Jersey Office of Emergency Management at http://www.ready.nj.gov/plan-prepare/hurricanes.shtml.

Current Conditions

In general, New Jersey's beaches are in good condition heading into the summer. The combination of consecutive mild winters with past commitments of local, state, and federal officials to enhancing our beaches, has resulted in wide beaches and robust dunes in many communities. Still there remain several erosional hot spots that are in dire need of maintenance. While several communities are scheduled to receive sand later this year as a part of federal projects, the federal commitment to such projects has been tenuous at best. This reinforces the importance of maintaining the state's commitment through sources like the Shore Protection Fund to ensure that long-term safety and vitality of New Jersey's coastal communities.

In the short term, most of New Jersey's beaches will be accessible and open for business beginning this weekend. Early season swimmers are urged to use caution as large sand bars generated over the winter are still present in many locations. These sand bars can lead to the formation of dangerous rip currents. Swimmers are urged to never swim alone and only swim when lifeguards are present (https://www.noaa.gov/jetstream/ocean/rip-currents/rip-current-safety).

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This publication is the result of work, research sponsored by the New Jersey Sea Grant Consortium (NJSGC) with funds from the National Oceanic and Atmospheric Administration (NOAA) Office of Sea Grant, U.S. Department of Commerce, under NOAA grant number NA24OARX417C0154-T1-01 and the NJSGC. The statements, findings, conclusions, and recommendations are those of the author(s) and do not necessarily reflect the views of the NJSGC or the U.S. Department of Commerce. NJSG-26-1039
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