November 2025

# New Jersey's Rising Seas and Changing Coastal Storms

## 2025 Science and Technical Advisory Panel Report Summary and FAQs

### OVERVIEW

Human-caused climate change is accelerating sea-level rise in New Jersey. These rising sea levels and changes in coastal storm characteristics are rapidly increasing flood hazards along the New Jersey coast and in communities near tidal rivers, marshes, and wetlands. The New Jersey Science and Technical Advisory Panel on Sea-Level Rise and Changing Coastal Storms (STAP) was charged by the New Jersey Department of Environmental Protection (NJDEP) to identify, evaluate, and summarize the most current science on sea-level rise and changing coastal storms.

Flooded streets after a winter storm in Ocean City, NJ (Evan Lyon/USCG).

This Summary and FAQ document summarizes *New Jersey's Rising Seas and Changing Coastal Storms: Report of the 2025 Science and Technical Advisory Panel* (or 2025 STAP Report, available here). The 2025 STAP Report includes detailed (1) sea-level rise projections for The Battery, NY; Sandy Hook, NJ; Atlantic City, NJ; Cape May, NJ; and Philadelphia, PA, (2) assessments regarding changing coastal storms, and (3) summaries of sea-level rise and changing coastal storm impacts on New Jersey ecosystems. The STAP projected future sea-level rise based on three different greenhouse gas emissions scenarios and found that in Atlantic City, NJ:[1]

- **Under a low emissions scenario** (where global net-zero carbon dioxide [$CO_2$] emissions are achieved by 2075), New Jersey is *likely* to see sea-level rise between 1.8 and 3.3 feet (22 and 40 inches) by 2100 in the absence of the processes that could lead to rapid ice-sheet loss.[2] Rapid ice-sheet loss processes could extend this *likely* range to 3.7 feet (44 inches) by 2100.[3]

- **Under an intermediate emissions scenario** (where greenhouse gas emissions slowly rise until about 2050 and then decline), New Jersey is *likely* to see sea-level rise between 2.2 and 3.8 feet (26 and 46 inches) by 2100 in the absence of rapid ice-sheet loss processes. Rapid ice-sheet loss processes could extend this likely range to 4.5 feet (54 inches) by 2100.

- **Under a high emissions scenario** (where greenhouse gas emissions grow through 2100), New Jersey is *likely* to see sea-level rise between 2.6 and 4.3 feet (31 and 52 inches) by 2100 in the absence of rapid ice-sheet loss processes. Rapid ice-sheet loss processes could extend this *likely* range to 5.2 feet (62 inches) by 2100.

---

[1] See FAQ #2 for background regarding why Atlantic City, NJ, is the 2025 STAP Report's representative location.
[2] All sea-level rise estimates, unless noted otherwise, are relative to the 1995-2014 baseline centered on the year 2005. See FAQ #3 below to learn more about why the 2025 STAP uses a 2005 baseline. See FAQ #7a for information regarding why *likely* is italicized.
[3] Rapid ice-sheet loss is defined below in FAQ #7 and explored in more detail below in FAQ #5.

## KEY TAKEAWAYS

### Sea-level Rise

Sea-level rise at a global scale is driven by the thermal expansion of ocean water, the loss of land ice through melting ice sheets and glaciers, and changes in the amount of water stored on land. Various factors, including the sinking of land due to both natural and human-caused processes, changes in ocean circulation, and the gravitational effects of shrinking land ice, cause sea level to vary from place to place. The STAP's sea-level rise projections include both the magnitude (amount) and rate (speed) of sea-level rise in New Jersey. The values below are for Atlantic City, NJ, unless specified otherwise.

#### Historic Sea-level Rise in New Jersey

Sea level in Atlantic City rose about 1.5 feet (18.0 ± 0.9 inches) from 1912 to 2021, at an average rate of 1.7 inches/decade. This compares to a global-mean rise of 0.5 feet (6.4 ± 0.9 inches) over the same period, at an average rate of 0.6 inches/decade. In other words, sea level in New Jersey rose nearly three times faster than the global average over this time period. This difference is primarily the result of sinking land.

Between 2005 and 2020, sea-level at New Jersey tide gauges rose by about 4 inches, ranging from 3.7 ± 1.3 inches at Atlantic City to 4.4 ± 1.6 inches at Cape May.

#### Magnitude of Future Sea-level Rise in New Jersey

**Near-term sea-level rise projections (to 2050)** – New Jersey is *likely* to experience between 0.9 and 1.7 feet (11 and 20 inches) of sea-level rise by 2050.[4]

**Longer-term sea-level rise projections (to 2100)**

- **Under a low emissions scenario**[5] (where global net-zero $CO_2$ emissions are achieved by 2075), New Jersey is *likely* to see sea-level rise between 1.8 and 3.3 feet (22 and 40 inches) by 2100 in the absence of the processes that could lead to rapid ice-sheet loss. Rapid ice-sheet loss processes could extend this *likely* range to 3.7 feet (44 inches) by 2100.
- **Under an intermediate emissions scenario** (where greenhouse gas emissions slowly rise until about 2050 and then decline), New Jersey is *likely* to see sea-level rise between 2.2 and 3.8 feet (26 and 46 inches) by 2100 in the absence of rapid ice-sheet loss processes. Rapid ice-sheet loss processes could extend this likely range to 4.5 feet (54 inches) by 2100.
- **Under a high emissions scenario** (where greenhouse gas emissions grow through 2100), New Jersey is *likely* to see sea-level rise between 2.6 and 4.3 feet (31 and 52 inches) by 2100 in the absence of rapid ice-sheet loss processes. Rapid ice-sheet loss processes could extend this *likely* range to 5.2 feet (62 inches) by 2100.

[4] All projections of future sea-level rise in the 2025 STAP Report refer to 19-year averages; for example, the projections for the year 2050 are for the average sea level over the 19-year period centered on 2050 (i.e., 2041-2059). See FAQ #3 and #7 for additional relevant information on interpreting these sea-level rise projections.
[5] Refer to FAQ #5b for more information about emissions scenarios.

### Rates of Future Sea-level Rise in New Jersey

- **Under a low emissions scenario**, New Jersey is *likely* to experience average sea-level rise rates of 2.5 to 4.3 inches/decade over 2040-2060 and 1.3 to 4.1 inches/decade over 2080-2100 in the absence of potential rapid ice-sheet loss processes. Rapid ice-sheet loss processes could increase the *likely* rate to 4.9 inches/decade) and 5.3 inches/decade over each period, respectively.

- **Under an intermediate emissions scenario**, New Jersey is *likely* to experience average sea-level rise rates of 2.9 to 4.7 inches/decade over 2040-2060 and 2.2 to 5.6 inches/decade over 2080-2100 in the absence of potential rapid ice-sheet loss processes. Rapid ice-sheet loss processes could increase the *likely* rate to 5.8 inches/decade and 8.4 inches/decade for each period, respectively.

- **Under a high emissions scenario,** Atlantic City, NJ is *likely* to experience average sea-level rise rates of 3.2 to 4.9 inches/decade over 2040-2060 and 3.2 to 7.2 inches/decade over 2080-2100 in the absence of potential rapid ice-sheet loss processes. Rapid ice-sheet loss processes could increase the *likely* rate to 6.5 inches/decade and 11.8 inches/decade for each period, respectively.

## Coastal Storms

Higher sea levels will increase flooding and the impacts from high tides and coastal storms, which include hurricanes and nor'easters.

### Tropical Cyclones

Tropical cyclones (TCs), including hurricanes, are rapidly rotating storms that begin over tropical oceans and vary in speed, size, and intensity. TC frequency has increased over the North Atlantic since the 1980s. The overall intensity (i.e., wind speed) that Atlantic TCs achieve, and the rate at which they intensify, has also increased in recent decades. However, the relative role of various drivers (such as increases in greenhouse gases, decreases in particulate matter pollution, and natural variability) for such intensity changes is unclear. The historic rainfall intensity of tropical storms is increasing with climate change. While the annual average number of hurricanes is not expected to change in the future, hurricane wind speed, intensification rate, and rainfall intensity are expected to increase with warming.

### Extratropical Cyclones

Extratropical cyclones (ETCs), called nor'easters along the US Atlantic coast, are large storms that form outside of the tropics and are typically larger than TCs and affect coastal New Jersey more frequently than TCs. As with TCs, the precipitation intensity of ETCs has been increasing over time. However, long-term historical trends in ETC frequency, intensity, and trajectory remain an area of active research; currently, there is no definitive consensus regarding such changes. Likewise, predictions of long-term trends in ETC changes are limited and an active research area.

## Coastal Flooding

Coastal flooding can have detrimental impacts on infrastructure and communities. For example, they can force business closures and roadblocks due to flooding, overwhelm stormwater systems, and degrade roads, bridges, pipes, buildings, and other infrastructure repeatedly exposed to saltwater.

"Coastal flood days" refers to days with a coastal high water level that exceeds a national flood threshold for a minor flood. The flood thresholds used in the STAP report were established by the National Oceanic and Atmospheric

Administration and describe how serious a flood is, no matter what the causes of such a flood are (e.g., an unusually high tide, storm surge, sea-level rise).

The values for coastal flooding below are for Atlantic City, NJ, but the 2025 STAP Report contains values for The Battery (NY), Sandy Hook (NJ), Cape May (NJ), and Philadelphia (PA). For Atlantic City, NJ, the minor coastal flood threshold is 4.0 feet above mean sea level (1.8 feet above mean higher high water) between 1995-2014.

### Historic Coastal Flooding

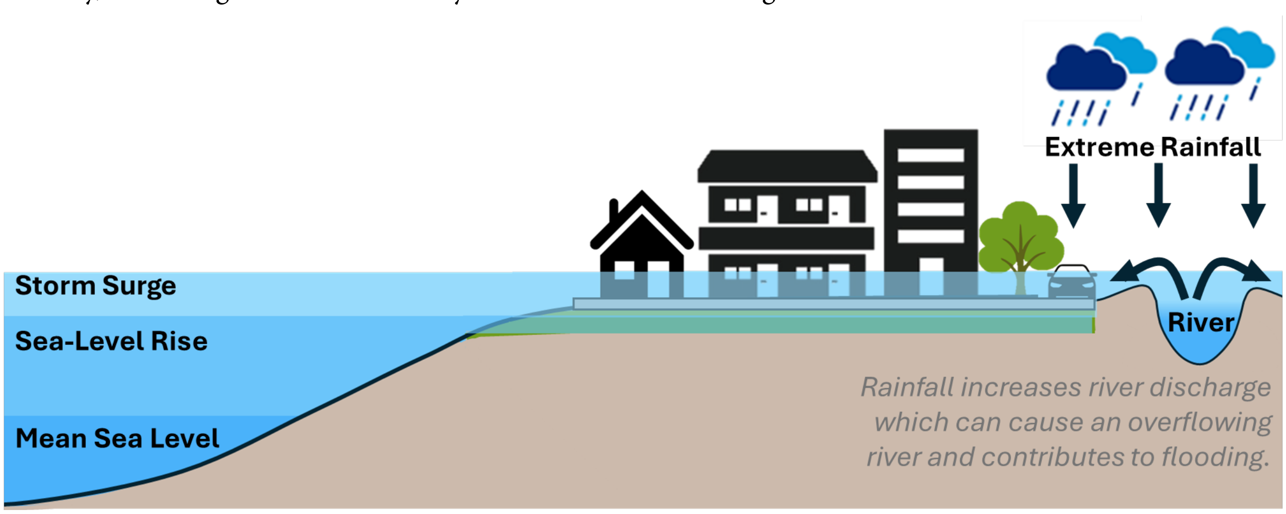
The total number of New Jersey coastal flood days has increased in frequency and magnitude over time as a result of sea-level rise. In the 1950s, Atlantic City experienced an average of less than one coastal flood day per year. Over 2007–2024, there were an average of twelve coastal flood days per year, with annual totals ranging between four coastal flood days in 2007 and an all-time high of 23 coastal flood days in 2024.

### Future Coastal Flooding

Even without considering future changes to storm characteristics, future coastal flooding will be more frequent and intense due to rising sea levels. By 2050, under an intermediate emissions scenario in the absence of rapid ice-sheet loss processes, Atlantic City, NJ, will likely experience between 29 and 148 coastal flood days per year. Including rapid ice-sheet loss processes could extend the likely range to 178 coastal flood days per year. By 2100, under an intermediate emissions scenario, it is extremely likely (more than a 95% chance regardless of whether rapid ice-sheet loss processes are incorporated or not) that the average number of coastal flood days in Atlantic City will exceed 131 per year.

### Compound Flooding

Storm surges, high volume river discharges due to precipitation, and extreme rainfall often occur during a storm and interact in ways that intensify flood hazards, resulting in a compound flood event as depicted in the schematic below. Compound flooding is also affected by sea-level rise because higher sea levels increase the baseline for flooding from compound flood events. Compound flood events are becoming more common and are projected to continue increasing due to the combination of continued sea-level rise, increased rainfall intensity, and changes in storm intensity and associated storm surges.




Some factors contributing to compound flood events are displayed in the schematic above. The amount of flooding each factor contributes is site-specific and will change over time. Factors not pictured include: the tide (flood levels are higher during high tide); the intensity of storm systems, the approach angle of storm systems, and forward speed of storm systems toward the coast; and more.

## Impacts of Sea-Level Rise and Coastal Flooding

Sea-level rise and coastal storms significantly affect coastal environments' erosion, ecology, and hydrology. The future resilience of New Jersey's coastal environments will be shaped by how effectively planning and management approaches integrate coastal flood risks and consider the differing capacities of communities to adapt.

### Erosion

New Jersey's shorelines have experienced and will continue to experience significant erosion driven by sea-level rise and storms, with patterns strongly influenced by local geomorphology (i.e., the shape and characteristics of the land) and the extent of coastal engineering and resilience efforts (e.g., living shorelines, beach nourishment, seawalls). While current levels of intervention have successfully reduced erosion rates in some places, these efforts may become economically unsustainable in the future, particularly for lower-income communities.

### Ecology

Wetlands are one ecosystem that is impacted by sea-level rise. Healthy coastal wetlands are a valuable coastal ecosystem that provides habitat for wildlife, protects coastlines from storm surges and waves, reduces flooding, sequesters pollutants, and removes nutrients. Wetlands can adapt to sea-level rise by accumulating sediment and plant material to build elevation over time. Between 1993 and 2021, the sea level rose an estimated 2.0 inches/decade at Atlantic City, NJ. This is near the maximum rate of sea-level rise with which coastal wetlands can keep pace. Even under a low emissions scenario, future projected rates of sea-level rise in coastal New Jersey may exceed the pace at which many coastal wetlands are able to adapt.

### Hydrology

Sea-level rise will cause saltwater to move into both groundwater and surface water sources used for drinking and irrigation in New Jersey. Barrier islands, especially those that pump large volumes of water from groundwater aquifers, are expected to be particularly vulnerable to this "saltwater intrusion." Sea-level rise will also raise coastal water tables, causing additional groundwater to surface, leading to more flooding. Further studies are needed to identify what communities will be most impacted by saltwater intrusion and groundwater flooding.


New Jersey ecosystems and resources impacted by sea-level rise and coastal flooding include (from left to right) shorelines, wetlands, and drinking water.

## FREQUENTLY ASKED QUESTIONS

### 1. Why was this report published?

Human-caused climate change is accelerating sea-level rise in New Jersey. These rising sea levels and changes in coastal storm characteristics are rapidly increasing flood hazards along the New Jersey coast and in communities near tidal rivers, marshes, and wetlands. The 2025 STAP Report represents the findings of the third New Jersey Science and Technical Advisory Panel (STAP) on Sea-Level Rise and Coastal Storms to provide decision-makers with the information they need to make informed decisions.

In 2016, Rutgers University researchers convened a panel of scientists to assess projections of future sea-level and storm changes affecting the Garden State. To ensure the usability of their assessment, the scientists also consulted with practitioners to discuss how they would integrate the science into their decisions to enhance the coastal resilience of New Jersey's people, places, and assets. In 2019, the New Jersey Department of Environmental Protection (NJDEP) engaged scientists at Rutgers to conduct new consultations with panels of scientists and practitioners to update its 2016 work to reflect the most recent climate science. NJDEP again engaged Rutgers to update its 2019 work to reflect the most recent climate science.

Key updates in the new report include: considering the most updated emissions scenarios; detailed projected sea-level rise rates and magnitudes; flooding frequencies for multiple locations; and a more robust summary of the impacts of sea-level rise and coastal storms. Consistent with prior STAP reports and the charge for the 2025 STAP, the 2025 STAP Report provides projections of sea-level rise rather than a description of the likely impacts of the resulting flooding on individual communities. This Summary and FAQ document briefly summarizes the 2025 STAP Report.

### 2. Why does this Summary and FAQ document and the 2025 STAP Report focus on Atlantic City, New Jersey?

Consistent with previous STAP Reports, Atlantic City was selected by the STAP as the tide gauge station that would represent the New Jersey coast in the 2025 STAP Report. Atlantic City has the longest tide gauge record in the state, and sea-level rise projections for other open coast locations, such as Sandy Hook, NJ, and Cape May, NJ, are fairly similar to Atlantic City, NJ. The 2025 STAP Report's appendices contain values for The Battery (NY), Sandy Hook (NJ), Cape May (NJ), and Philadelphia (PA). The most significant differences in sea-level rise projections are due to higher rates of land sinking on the coastal plain compared to Philadelphia and the Battery, but these differences are relatively small (about 4 inches per century).

The 2025 STAP Report focuses on the impacts of sea-level rise along New Jersey's coast. The "coast" means parts of New Jersey that are affected by the tides. This includes parts of the following counties, listed from north to south: Bergen, Hudson, Union, Middlesex, Monmouth, Ocean, Atlantic, Cape May, Cumberland, Salem, Gloucester, Camden, Burlington and Mercer. Additionally, the STAP recognizes that the coast is not an isolated system and can be impacted by upriver or upland areas (e.g., storms that impact inland areas may also have impacts on the coast). As such, the STAP does include assessments regarding storms that may have direct impacts on inland areas not along the coast.

## 3. Why does the STAP use a 2005 baseline, but the historical record above continues to 2021?

A sea-level rise baseline is the reference point, or starting elevation, used to measure and project future changes in sea level. The methods of calculating a baseline are different than measuring historic sea-level rise. Sea level is averaged over a 19-year period to create a baseline: measuring average sea levels over a 19-year period occurs at tide gauges and ensures that significant tidal variations (e.g., changes in the height of the sea caused by weather, seasons, astronomical cycles) are included. The 2025 STAP used a 1995-2014 baseline centered on the year 2005 to be consistent with the methods used in the Intergovernmental Panel on Climate Change's (IPCC) 6$^{th}$ Assessment Report (AR6). The AR6 is the latest comprehensive climate report from the IPCC and is the authoritative text regarding the physical science of climate change through sea-level budget analyses which use observed data and models to quantify the contributions of sea-level rise factors (e.g., thermal expansion of ocean water, ice-sheet melt) to total sea-level rise. Sea-level budget data available through 2021 was used in this report. Through a separate analysis, the STAP found sea level in Atlantic City, NJ, rose 0.3 ± 0.1 feet (3.6 ± 1.2 inches) from 2005 to 2020.

Tidal flooding in Ventnor (top, Stephen Jasiecki/MyCoast ) and Middle Township (bottom, Marian Jordan/MyCoast).

## 4. When will sea-level rise impact me?

Communities across New Jersey that have experienced coastal flooding are already feeling the impacts of sea-level rise and changing coastal storms. The frequency of coastal flood days on the Jersey shore, for example, is more than ten times larger than it was in the 1950s. The year sea-level rise directly impacts a given location in New Jersey will depend on human decisions and behaviors that influence (1) the amount of greenhouse gas emissions and (2) the use of land and natural resources at the global and local levels. Estimates of when sea-level rise will occur can be found in the 2025 STAP Report for various locations in New Jersey and each emissions scenario.

It is outside the scope of the STAP Report to determine which sea-level rise projections should be used by decision makers. Those decisions depend on (1) the level of risk that decision makers and impacted communities are willing to accept when determining their short- and long-term resilience goals and (2) the projected costs and benefits of taking the necessary actions to mitigate those risks or to adapt to their consequences.

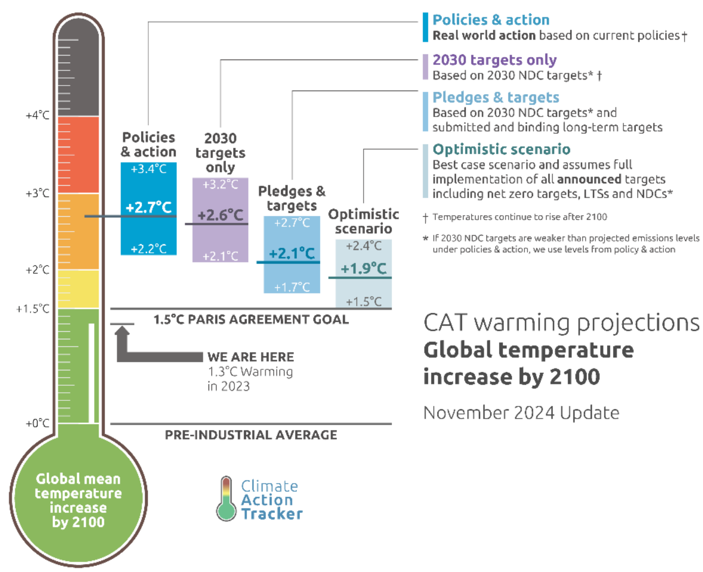
Entities with high-risk tolerance (i.e., would like to be "less protective" and plan for lower amounts of sea-level rise) may want to consider sea-level rise estimates with a higher likelihood of occurring. In contrast, entities with low-risk tolerance (i.e., would like to be "more protective" and plan for higher amounts of sea-level rise, or are concerned for the resilience of critical facilities and infrastructure) may want to consider sea-level rise estimates with a lower likelihood of occurring but may have a larger impact. However, local conditions (including subsidence) must be analyzed to provide more detailed estimates of sea-level rise and its impact on specific communities.

## 5. What are the major differences between the 2019 and 2025 STAP Reports?

There are three major differences between the 2019 and 2025 STAP reports. All are consistent with scientific advances, including those advances detailed in AR6 which was published in stages between 2021 and 2023 (i.e., after the 2019 STAP report was published). The AR6 is the latest comprehensive climate report from the IPCC and is the authoritative text regarding the physical science of climate change (including sea-level rise) and its impacts.

a. **Updating the Baseline Sea-level Rise Is Measured Against:** Over time, scientists update the reference point used to track sea-level rise. A modern baseline is useful for communication and decision-making purposes, as it is helpful to measure sea-level rise as close to today's true sea level as possible. The AR6 and the 2025 STAP Report use a 2005 baseline (19-year average between 1995 and 2014) while the 2019 STAP Report uses a 2000 baseline (19-year average between 1991 and 2009). Readers need to subtract 0.1ft from any 2019 STAP estimate to have the same baseline used in the 2025 STAP Report.

b. **Using Updated Emissions Scenarios:** The 2019 STAP Report provided projections of sea-level rise for global low, moderate, and high greenhouse gas emissions trajectories (corresponding respectively with 2°C, 3.5°C, and 5.0°C of warming above pre-industrial levels by 2100). Focusing on these warming scenarios for the 2019 STAP Report was logical at the time, given evidence indicating that the then-current policy and technology would lead to a median projected 3.3 °C of warming by 2100. The 2025 STAP Report provides projections of sea-level rise for global low, intermediate, and high greenhouse gas trajectories (corresponding with median 1.6°C, 2.6°C, and 3.8°C of warming by 2100, respectively) consistent with the more recent AR6's Shared Socioeconomic Pathway (SSP) emission scenarios. The emission scenarios used in the 2025 STAP Report are logical to focus on because current analyses indicate a median projected 2.7 °C of warming by 2100 per the Climate Action Tracker (CAT) (as shown above). These projections of future warming are based on global climate policies in place as of November 2024. In addition, the 'low,' 'intermediate,' and 'high' labels used in the 2025 STAP Report are consistent with those used in the AR6.




Learn more and download image at CAT 2025.

c. **Providing Sea-Level Rise Estimates that Include and Exclude Unknown-Likelihood High-Impact Ice-Sheet Processes:** The 2019 and 2025 STAP Reports employ similar methodologies to create sea-level rise estimates but differ in how they incorporate potential rapid ice-sheet loss processes (i.e., the unknown-likelihood, high-impact effects of rapid ice-sheet losses in Greenland and Antarctica). While both the 2019 and 2025 STAP Reports incorporate ice-sheet loss in sea-level rise estimates (i.e., ice loss from melting ice sheets and calving), the two STAP Reports differ in how processes on the frontier of scientific understanding with the potential to lead to greatly accelerated loss of ice in Antarctica and Greenland are reflected. Scientists are uncertain about how much and how fast these potential rapid ice-sheet loss processes may contribute to future sea-level rise.

The 2019 STAP Report included these potential impacts of rapid ice-sheet loss in all sea-level rise estimates. Consistent with AR6, the 2025 STAP Report provides sea-level rise projections that include these potential rapid ice-sheet loss processes and projections that do not. This allows users to choose between more protective projections that attempt to include unknown-likelihood, high-impact processes and less protective projections that exclude them.

## 6. NASA has an online sea-level projection tool that is consistent with the AR6 and for the same tide gauges used in the 2025 STAP Report. Are the 2025 STAP Report's sea-level rise estimates more accurate than the NASA tool?

The NASA/IPCC Sea-level Projection Tool (available here: https://sealevel.nasa.gov/ipcc/) uses sea-level rise projections conducted in AR6. The projections in the 2025 STAP Report are based on an updated version of the same projection framework used by AR6. These new projections allow the generation of sea-level rise projections that incorporate potential rapid ice-sheet loss processes for **all emissions scenarios**, whereas AR6 was able to incorporate potential rapid ice-sheet loss processes only for the low and very high emissions scenarios. This allows decision makers to choose between projections that attempt to include unknown-likelihood, high-impact processes (i.e., rapid ice-sheet loss processes) and projections that exclude them in line with site-specific risk tolerance. Other differences (of order 0.1 ft) from the AR6 projections are minor, due to numerical sampling choices and computational refinements. For a detailed comparison of STAP projections and IPCC projections, see Table C2 in the full 2025 STAP Report.

## 7. What are some key terms that all readers should know before reading the full 2025 STAP Report?

There are three important sets of terms associated with the 2025 STAP Report:

a. **Use of the term *likely*** – Consistent with convention in the climate science community, the STAP employs the term *likely* to indicate at least a 66% chance a stated outcome will occur. The STAP uses likelihood terms to make the STAP Report directly comparable to other national and international climate science reports. Terms are italicized to alert readers that these terms are not being used casually or in everyday language. They represent specific, defined terms for communicating quantifiable uncertainty.

b. **Greenhouse Gas Emissions Scenarios –** Projecting the magnitude and rate of sea-level rise after the year 2050 requires considering pathways of future global emissions of greenhouse gases. In other words, if global emissions of greenhouse gases are not curtailed, the magnitude and rate of sea-level rise will be greater than if emissions are reduced. The STAP considered four greenhouse gas emissions scenarios to inform its sea-level rise projections (low, intermediate, high, and very high). However, it focused most of the 2025 STAP Report on the low, intermediate, and high emission scenarios. This is because the very high emissions scenario is considered the least realistic, given recent global emissions policies and improvements in energy infrastructure leading to reductions in greenhouse gas emissions:

- **Low Emissions –** This scenario includes global net-zero $CO_2$ emissions by about 2075, with a good chance of meeting the international goal of limiting global warming to below 2°C above late-1800s levels. Net-zero means the amount of $CO_2$ released into the atmosphere will equal the amount of $CO_2$ removed from the atmosphere. By 2100, the median expected warming under this emissions scenario is 1.6°C relative to 1850-1900 levels. However, global emissions are not currently on track to achieve this low emissions scenario.

- **Intermediate Emissions** –This scenario anticipates global emissions slowly rising until about 2050 and then declining. By 2100, the median expected warming under this emissions scenario is 2.6°C relative to 1850-1900 levels. Current analyses indicate that policy and technology trends as of November 2024 are most consistent with the intermediate emissions scenario.
- **High Emissions** – This scenario is consistent with continued greenhouse gas emissions growth through 2100. By 2100, the median expected warming under this emissions scenario is 3.8°C relative to 1850-1900 levels. Global emissions are not currently on track to meet this high emissions scenario.
- **Very High Emissions** – This scenario is consistent with sustained growth in fossil fuel consumption comparable to that of the 1990s and 2000s. By 2100, the median expected warming under this emissions scenario is 4.7°C relative to 1850-1900 levels. Global emissions are not currently on track to meet this very high emissions scenario.

c. **Potential Rapid Ice-Sheet Loss Processes** – Ice sheets are continental-scale masses of ice, which on Earth today exist only in Antarctic and Greenland. Ice sheets are losing mass due to both surface melting (particularly in Greenland) and flow of ice into the ocean (particularly in Antarctica); in both cases, the loss of land ice contributes to rising sea levels. Some processes that could greatly accelerate ice loss are on the frontier of scientific understanding but are nonetheless relevant for some decisions because they could substantially increase projected sea-level rise. For example, if ice shelves (floating ice that abuts the ice sheet) off the Antarctic coast were to disintegrate faster than current projections, then that could allow large pieces to break (calve) off the ice sheet and allow additional pieces behind these to slide faster into the ocean. Similarly, changes in atmospheric circulation could lead to faster melting in Greenland. However, ice sheets are complex, and while they are the subject of increasing study, scientists currently have limited agreement regarding the environmental conditions (e.g., water and air temperature thresholds) that could lead to rapid acceleration in ice-sheet losses. Therefore, consistent with comparable reports like AR6, the 2025 STAP Report provides sea-level rise projections that include the potential impacts of rapid ice-sheet loss processes and sea-level rise projections that exclude them. This allows users to choose between more protective sea-level rise estimates (i.e., projections that include potential rapid ice-sheet loss processes) and less protective sea-level rise estimates (i.e., projections that exclude potential rapid ice-sheet loss processes).

## 8. When will the next STAP Report be published?

Consistent with the prior STAP reports, the 2025 STAP recommends that its estimates be reviewed and updated regularly, not to exceed every 5 years, and after the publication of relevant global (i.e., IPCC) or national assessments.

Complete copies of the 2025, 2019, and 2016 STAP Reports are available at:

**njclimateresourcecenter.rutgers.edu/resources/nj-sea-level-rise-reports**