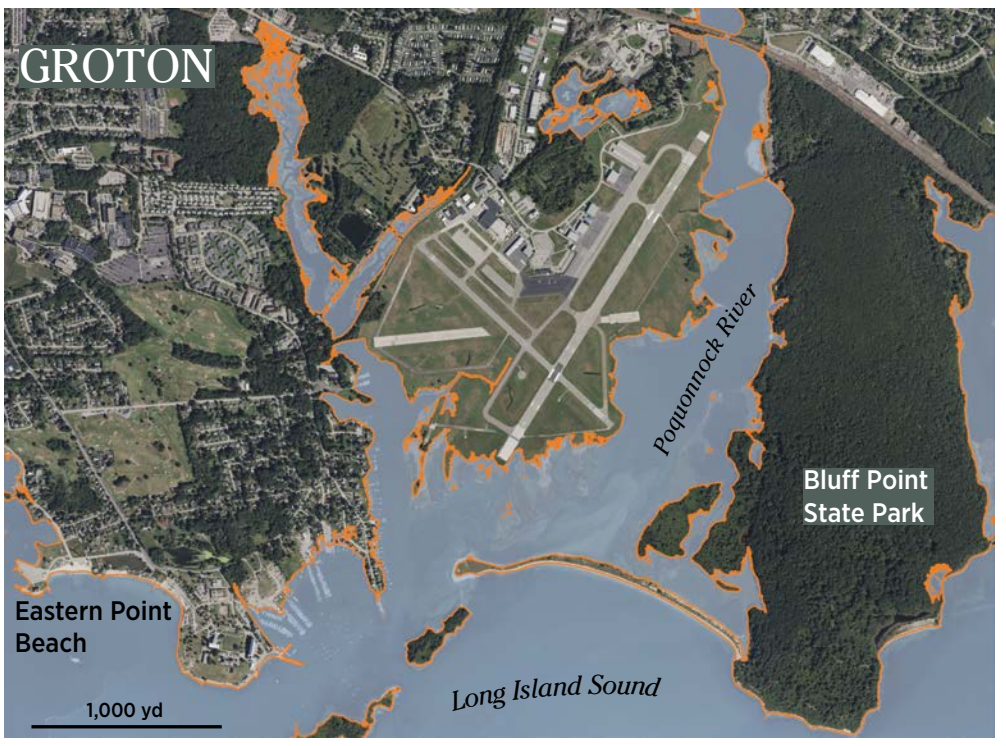
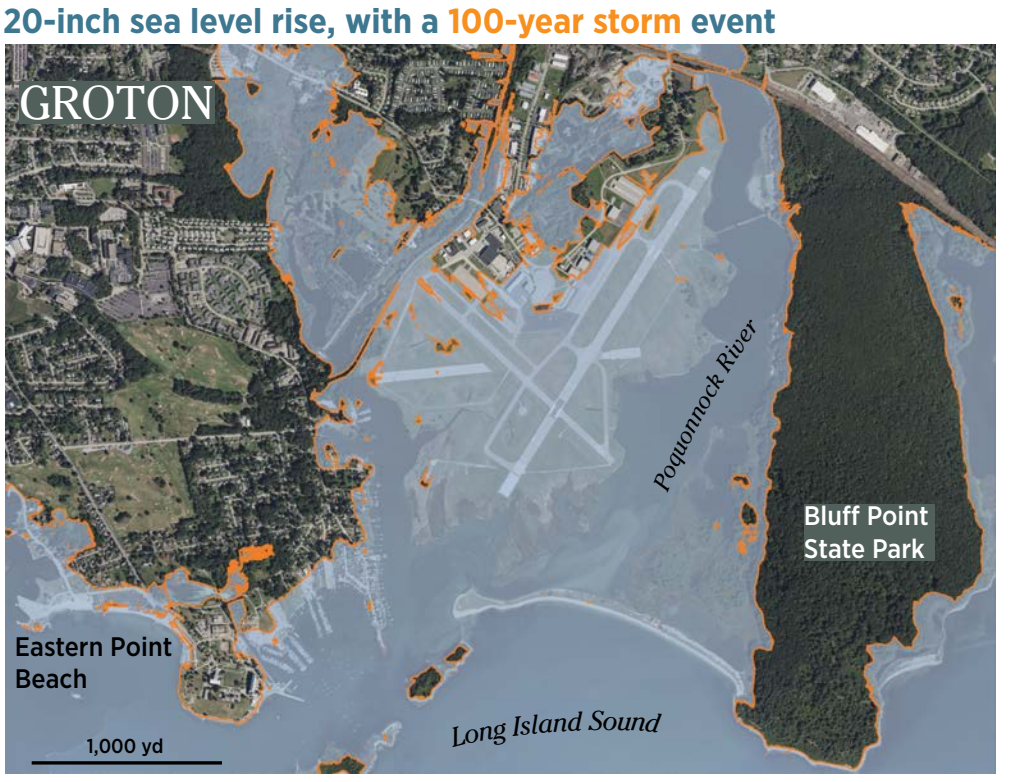
20-inch sea level rise



20-inch sea level rise, with a 100-year storm event



Higher sea levels and storm surge are shown in light blue with an orange border.

Airport may be affected by sea-level rise

FROM A1

which manages this airport and five others, including Bradley International Airport in Windsor Locks.

"That's our goal," he said during a phone interview. "It will take some time, but we anticipate it within the next year or two." And Bruno acknowledged that "sea level rise could potentially affect operations at the airport in the future."

The airport authority maintained in interviews this spring that Groton-New London's 5,000- and 4,000-foot-long asphalt runways have not flooded in the last two years, which were years of normal rainfall in the area. Bruno said the airport monitors its runways and parking lots and is aware of ocean trends and flood risks.

John Moody, director of general aviation for the CAA, said in an interview at the airport that the airport's runways are crowned — the asphalt is higher in the center than at the edges, to shed and drain water, like highways.

Bruno said the airport parking lot is more likely to flood first because it is located on slightly lower ground than the runways.

The runways are technically four runways, because each span can handle two-way plane traffic. These runways end less than 100 feet from the shoreline.

Climate and storm trends show the sea in southeastern Connecticut has been rising steadily and is projected to rise between 13 and 18 inches above the 1994-2014 baseline level by 2050, according to the Intergovernmental Panel on Climate Change.

In 2019 UConn Marine Sciences Professor James O'Donnell, whose expertise is ocean processes, recommended that the state plan for up to 20 inches of rise by 2050. The recommendation he gave through UConn's Connecticut Institute for Resilience and Climate Adaptation (CIRCA) is used in planning for state development projects.

"Note that this is the upper bound of what is likely," O'Donnell said in an email. "If you are building a road or a treatment plant, then that is prudent. The best guess is about half of that, but then there is a 50% chance that it will be higher."

Flood-prone area

The last Groton-New London Airport Master Plan in 2013 updated a 1999 plan, looking at the airport's future demands and financial analyses. The document noted that Groton-New London Airport lies within a "100-year floodplain," which means that in any given year, this area has a 1% chance of flooding.

Another way a property owner might define a 100-year floodplain is "those areas have at least a one-in-four chance of flooding during a 30-year mortgage," FEMA reports on its flood map website.

The plan noted the airport is located entirely within a coastal flood hazard area, and that part of the parking lot floods during major storms. Some parts of the plan were updated in 2017, and the document is on schedule for its next update this year, Bruno of the CAA confirmed.

The old plan said the safety areas at the end of the runways had sometimes flooded during hurricanes or other storms. Tower Road, one of the roads to the airport, floods in major rain during high tide.

Federal government flood maps confirm that the entirety of the Groton-New London Airport is vulnerable to flooding.

According to the maps, each area highlighted in light blue represents land that exceeds a 1% chance of experiencing a flood each year. The Federal Emergency Management Agency creates these maps to monitor these areas of land, which are considered to be at a "high risk" of annual flooding.

The frequency and intensity of storms in the region has been increasing for many years.

Although rainfall varies tremendously from year to year in Connecticut, the overall trend the last century has been toward a wetter state. Flooding near the coast is worst when sea-level and tides meet big rainfalls.

High rainfalls have been dramatic in the last five years: in 2019, more than 54 inches fell on the airport, according to the National Weather Service data from that site. This was almost 15 inches above the 39-year "normal" amount the service expects. But there have been low-rain years too, such as 2014, when just over 18 inches fell all year at the airport.

Connecticut's developed coastline is at risk for high tide flooding, which will impact roads, homes, businesses, and other infrastructure.

Sunny Wescott, chief meteorologist of the Homeland Security Cybersecurity and Infrastructure Security Agency, wrote in a report last year that "research predicts that the 21st century's tropical cyclones will likely occur over a wider range of latitudes than has been the case on Earth for the last 3 million years."

"This means that more tropical cyclones such as tropical storms and hurricanes will extend further north," University of Connecticut Sea Grant ecologist Julianna Barrett said, "and more storms may impact New England."

CIRCA's Connecticut Physical Climate Science Assessment Report (PCSAR), published in 2019 by six UConn scientists, found that, since 1980, the intensity of individual storms in Connecticut has increased. It also reported that the state has been getting more days with 1 inch or more of precipitation at a time, more days with heavy rain, and higher daily precipitation totals.

The report compares changes in precipitation to the increase in greenhouse gases in the atmosphere. It said that precipitation's intensity in individual storms will increase while the frequency of rainstorms will decrease. This combination is predicted to increase both flooding risks and drought risks.

Groton's resilience efforts

The Town of Groton has spent many years assessing the impacts of climate change and is now focusing on drafting strategies to enhance its resilience. The town hired a sustainability and resiliency manager about a year ago whose sole focus is the rising sea level and flooding issues and ways to resolve them.

Concerns about rising sea levels and extreme weather events have prompted proactive measures to safeguard against potential disasters.

Groton officials are prioritizing coastal flooding, stormwater management, and heat resilience to keep residents safe.

The town is working on structural improvements like backflow preventers, creating flood response plans and other measures to handle the changing landscape, collaborating with CIRCA.

Jonathan Reiner, director of the town's Office of Planning and Development Services, said Groton received a $200,000 state grant to safeguard the downtown Mystic area from rising water. In the summer, the town will start working on a five- to 10-year climate action plan. The town has also received grants for studying the use of permeable pavements that allow rainwater to seep into the ground instead of rushing into waterways.

A look at Logan Airport's flood risks

A larger waterfront airport has been dealing with the specter of flooding, too. Boston Logan International Airport, bordered by Boston Harbor, is also susceptible to sea level rise. According to the National Park Service, the sea level in Boston Harbor has risen 10 inches since the start of the Industrial Revolution and is estimated to rise another 2 to 4 feet by the end of 2100.

The Massachusetts Port Authority, which oversees Logan, began the Massport Resiliency Program in 2013 to prepare for the impacts of climate change.

The program created a design guide for "floodproofing," most recently revised in 2018. It is supposed to minimize flood and property damage and protect passengers, occupants and workers.

The guide explained the resilience initiative was created as South Boston faces an increase in flooding hazards caused by storms and rising sea levels as a result of climate change. It was launched after the impacts of the Hurricanes Sandy and Irene and winter storm Nemo.

Massport hired Kleinfelder Northeast to perform a "Disaster and Infrastructure Resiliency Planning Study" to focus on the risks associated with climate change, specifically coastal flooding.

The city of Boston is also working on ways to reduce flooding risk along the East Boston waterfront.

About the maps

The Connecticut Institute for Resilience and Climate Adaptation at the University of Connecticut has recommended that planners anticipate a 20-inch sea level rise in Long Island Sound by 2050. The projection used National Oceanic and Atmospheric Administration data modified to include the effects of local oceanographic conditions and land movement, as well as more recent data and models.

CIRCA researchers also modeled storm surge water levels. The models were calibrated to account for the "complexity of Connecticut's geology and landscapes." A 10-year flood event has a 10% chance of occurring in any given year. A 100-year storm has a 1% chance of occurring.

You can find more information at **https://circa.uconn.edu/sea-level-rise-and-storm-surge-viewer/**.

Groton among most at-risk communities for flooding in state

FROM A1

whenever "new and more accurate information becomes available."

Groton is one of the most at-risk areas for flooding in Connecticut. Under current flood maps, FEMA designates a majority of that community's coastline with Long Island Sound as one of the two most at-risk of flood hazard zones: either Zone VE or Zone AE.

A Zone VE is defined by FEMA as an area "where wave action and fast-moving water can cause extensive damage during a base flood event," while a Zone AE is defined as an area with "at least a 1% annual chance of being flooded, but where wave heights are less than 3 feet."

Many of Groton's residential areas are categorized as Zone X, which have a lower risk of flooding than Zone VE and AE, but not a 0% risk. As sea levels keep rising, however, these areas could soon join their more at-risk counterparts in Zone VE and AE.

One of the most at-risk areas in Groton is the Groton-New London Airport. Located between the Poquonnock River and Baker Cove, nearly the entire airport is classified as a Zone VE or AE, including all of both runways. The airport has seen an increase in flooding, which will only continue due to sea level rise.

Connecticut Airport Authority spokesman Brian Spyros confirmed that Groton-New London Airport, like any coastal property, carries flood insurance coverage. He declined to elaborate on whether their coverage or costs have changed due to rising sea levels.

For further information:
· FEMA flood map updates: https://www.fema.gov/faq/frequency-updating-flood-maps · FEMA zone definitions: https://www.fema.gov/flood-maps/coastal/insurance-rate-maps · Groton flood zone map: https://maps.groton-ct.gov/apps/FEMA-FloodMaps/ · CT flood insurance requirements: https://ctmetro.org/regional-planning/environmental-planning/flood-protection/

Last giant pandas in the U.S. are leaving, but China says it will send more

By DAN ROSENZWEIG-ZIFF
The Washington Post

The Atlanta zoo will return its four pandas to China late this year, the facility announced Friday, in the latest chapter of a program often labeled "panda diplomacy."

The parents and their twins have been the only giant pandas in the United States since November, when the National Zoo in Washington returned three of the bears to China in a move that some saw as an ominous sign of deteriorating relations between the U.S. and Chinese governments. China owns and leases all giant pandas in U.S. zoos.

Lun Lun, 26, and Yang Yang, 26, have been in Atlanta since 1999, when they came as part of a 25-year loan agreement. They've had seven children since then, including twins Ya Lun and Xi Lun, 7, the last of the offspring still in the country.

The zoo announced in November that the quartet would be leaving this year but had not indicated when that might be. It said this week that they would return in the fourth quarter.

Their exact departure date is not clear, nor how they will make the trip. Zoo Atlanta did not immediately respond to a request for comment Saturday, and the Friday news release said the zoo has applied for the pandas' international travel permit.

"The process for sending giant pandas to China is extensive and requires months of planning," the zoo said in a statement.

Last year's farewell to three bears in D.C. could offer some clues.

The November morning when they left began with staffers loading stacks of bamboo onto three large FedEx trucks as the sun rose. That was to make sure the pandas could snack during their travels.

The pandas were loaded into large shipping crates, placed onto trucks by a forklift and driven to nearby Dulles International Airport.

They were then packed onto a FedEx cargo jet with two zookeepers for a 19-hour, 9,000-mile journey to Chengdu, China, The Washington Post reported at the time.

Relatives of the Atlanta pandas have already made a similar journey to China's Chengdu Research Base of Giant Panda Breeding, where they now reside and have had children themselves.

The last ones to make the journey were another set of twins, Mei Lun and Mei Huan, who departed for China in 2016 after they turned 3 years old.

Zoo Atlanta said it had not yet discussed the future of the giant panda program with partners in China. It noted that it has contributed more than $17 million to support the conservation of wild giant pandas and plans a summer of celebrating the pandas, starting June 1.

The United States, though, could welcome a pair of new pandas before the four depart Atlanta.

San Diego Zoo staffers visited China this year to prepare for the arrivals of Yun Chuan and Xin Bao as early as this summer, the Associated Press reported. Pandas had lived there and in Memphis before returning to China as their agreements expired in recent years.

When Chinese leader Xi Jinping visited San Francisco in November, he suggested Beijing would send new pandas, signaling that China would continue its panda diplomacy.

In February, National Zoo officials indicated that they were in discussions to bring back giant pandas to D.C., though it is not clear when that could happen.

If the San Diego Zoo doesn't receive those bears before the Atlanta-based family leaves, the United States will be without giant pandas for the first time in more than 50 years.

The black and white animals have been a cornerstone of U.S.-China relations since they arrived in 1972, a move sparked by a banquet conversation between first lady Pat Nixon and Premier Zhou Enlai, China's second-in-command to Chairman Mao Zedong.

The first lady and President Richard M. Nixon were in Beijing for a historic Cold War visit to communist China.

Fewer than 1,900 giant pandas remain in the wild in China, according to Zoo Atlanta, with the majority in nature reserves. While many in the area may be sad to see the bears leave, the zoo said it was grateful to have looked after them for more than two decades.

"We have merely been fortunate enough to be their stewards and introduce so many people here in the U.S. to this species," it said on its website.