

Puerto Rico recovering from two Category 4 and 5 hurricane strikes

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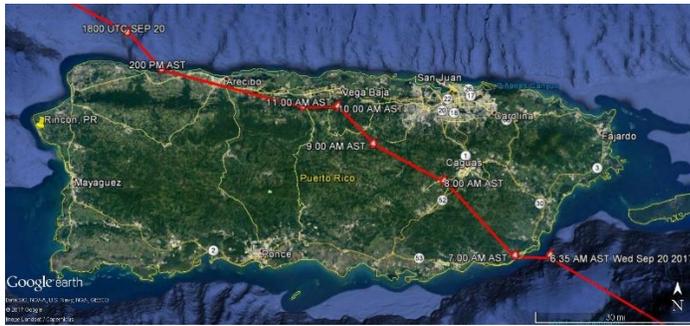
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The Puerto Rican archipelago is uniquely located in the Caribbean, and is constantly exposed to extreme weather events. In the past, Puerto Rico has faced hurricanes like San Felipe, San Ciprián, Hugo and Georges, among others. Recently, we received direct impacts from Hurricanes Irma and María within two weeks. Hurricane Irma, a Category 5 storm, nearly struck Puerto Rico on September 6, 2017, and affected the northeast area of the PR mainland, causing great devastation. The government preliminarily estimated damages at \$600 million. Several municipalities were declared disaster areas because of the destruction the storm left in its wake, including Adjuntas, Canóvanas, Carolina, Guaynabo, Juncos, Loíza, Luquillo, Orocovis, Patillas, Utuado, Vieques and Culebra, among others. Two weeks later, specifically, on September 20, 2017, Hurricane María swept through our archipelago. This powerful Category 4 hurricane crossed the entirety of the PR mainland. It entered through Yabucoa and left through the coast of Isabela. It continuously pounded the island for approximately 27 hours, causing never before seen consequences on the country. The strong winds, intense rainfall (between 5 and 37 inches approximately), landslides and storm surge registered caused serious damage throughout the archipelago. Communications completely collapsed. The water and energy systems stopped working, several people lost their homes, vegetation was significantly harmed and the coasts were severely affected by erosion and coastal flooding.

The damages from erosion were so severe that some towns like Rincón, Aguadilla, Isabela, Luquillo and Loíza, were left practically without beaches. The buildings found there suffered unreparable damages. Rincón was the town most deeply affected by erosion and coastal flooding. Hotels, apartment buildings, restaurants and other commercial spaces were left inoperable, seriously harming the local economy. Economist José Alameda estimated the long-term losses associated with Hurricane María at about \$200 billion. A study performed by the University of Puerto Rico at Cayey Census Information Center (CIC) predicted that Hurricane María may increase poverty levels from 44.3% to 52.3%.

Currently, Puerto Rico is slowly recovering from these two powerful hurricanes. According to Professor Aurelio Mercado from the University of Puerto Rico at Mayagüez, subsequent hurricane seasons are expected to become even stronger, causing more damages to impacted areas. Because of this, it is important to educate others about the need to become resilient and develop the ability to effectively adapt to these risk factors and extreme weather events.

Below, we include several photographs that illustrate the damages caused by Hurricane María in Puerto Rico.



This figure shows Hurricane María's trajectory across Puerto Rico's mainland. Provided by Dr. Luis Aponte.



The combined effects of the storm surge, bad planning and construction on the maritime-terrestrial zone provoked erosion throughout the entire beach, and destroyed houses and buildings on Parcelas Stella, Rincón.



Storm surge and erosion caused the collapse of the fishing village in Crash Boat, Aguadilla, PR.



Winds and the storm surge caused the loss of homes in the Rompeolas sector, Aguadilla, PR.



The Joyuda sector in Cabo Rojo is well-known for its gastronomy. Several restaurants were severely affected by Hurricane María. Shown here is the Vista Bahía restaurant, which was destroyed by the combined efforts of the surf and the wind.



Several houses were affected by rains, wind and falling trees, like the house in this photograph, Añasco, PR.



Boats and structures on the coast were also destroyed by Hurricane María, as witnessed in this photograph, taken in Joyuda, Cabo Rojo, PR.



In El Maní, one of Mayagüez's coastal communities, many houses collapsed under the combined forces of storm surge, wind and flooding. Their location, so near the sea, made their destruction easier.



Many of the buildings constructed within the maritime-terrestrial zone were severely affected by Hurricane María. The damages give evidence of years of poor planning and the indiscriminate granting of building permits for projects on the coastal areas, Rincón, PR.



Tiles, rebar, cement and several other construction materials now pollute the water in the beaches of Rincón, PR. What were once summering houses and apartments now lie as monuments in the water, reminding us of hurricanes' consequences when combined with bad decisions made by people.



In the El Maní coastal community in Mayagüez, PR, the fishing village was also destroyed, as was the road, the sidewalks and other structures.



The Los Almendros, Córcega and Parcelas Stella in Rincón were among the most heavily damaged in the western side of Puerto Rico. Houses, apartments, fences and other building materials are now inside the water.



The Rincón Public Beach was also affected by the hurricane's passing.



Many buildings on the coastal area of Rincón suffered severe structural damages.



The Río Grande in Añasco burst from its Banks. This photograph shows the widespread flooding in the Añasco Valley as seen from a mountaintop.



In many places in the beaches of Rincón, PR, only ruins remain of what were once conveniently-located houses and apartments.