



# Formation, Propagation and Impacts of Hurricane Maria (2017) over Puerto Rico

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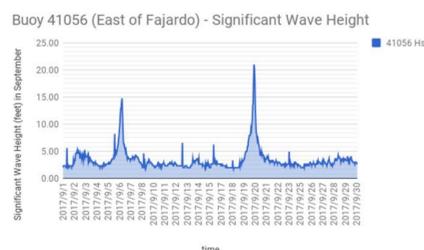
## Abstract

Hurricane Maria was an tropical storm that hit the Dominican Republic and Puerto Rico. It developed intensely from a tropical wave to a Category 5 hurricane, causing extensive damage to the islands and accounting for some of the worst tropical damage the U.S. has ever seen. Thousands were killed, billions of dollars in damages to roads and cities, and the entire Puerto Rico went months with no power. To this day, Puerto Rico and the Dominica are still reeling from the catastrophic effects of Hurricane Maria.

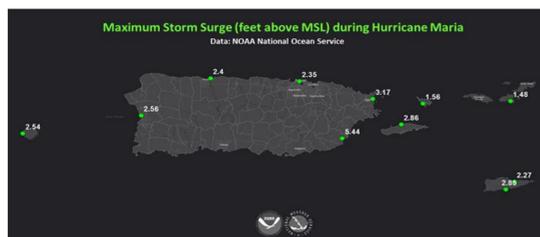
## Goals

To investigate the root causes and effects of Hurricane Maria for gain a better understanding.

## Waves & Surges



The figure to the right shows the height of the Waves caused by Hurricane Maria. Below shows the Surges caused.



## Formation

- Hurricane Maria formed from an African Easterly wave that made its way of the coast of western Africa, on September 12<sup>th</sup>.
- Over the next couple of days, the wave traveled westward towards the Caribbean, forming thunderstorms around the 15<sup>th</sup>.
- Due to heavy convection, a deep tropical depression formed east of Barbados on the 16<sup>th</sup>.
- It turn, the wave strengthened into a tropical storm, becoming a major hurricane on the 18<sup>th</sup>, and finally making landfall on the 20<sup>th</sup>.

## Rainfall & Tornadoes

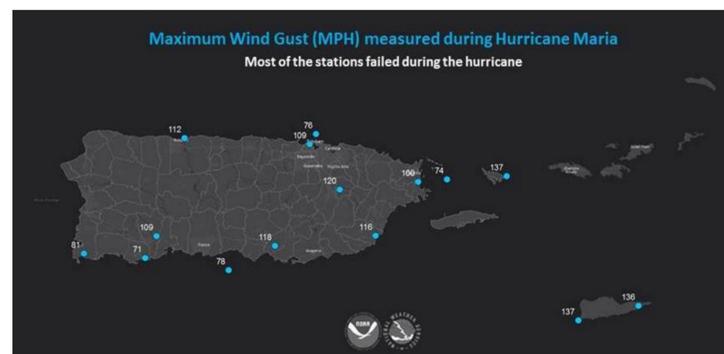
- Maria produced a massive amount of rain or both islands, pouring almost 23 in. of rain on the Dominican.
- Puerto Rico saw an even heavier amount, where one location was recorded to have almost 38 in. of rainfall, alone.
- Maria caused serious mudslides and flooding across both islands, as it flooded many f the rivers and lakes, most notably the La Plata River in Puerto Rico.
- It has been reported that there were about three alleged tornadoes witnessed during and after the Hurricane, in Puerto Rico.

## Damages

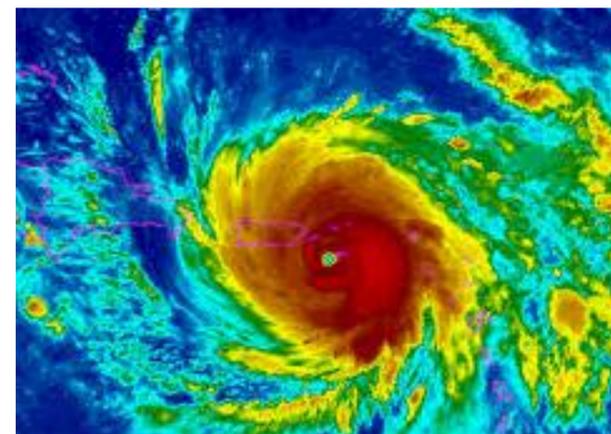
- Due to complications after the Hurricane, both the Maria as well as the U.S. aid may have led to around 4600 deaths of Puerto Ricans.
- It is estimated that Hurricane Maria caused around \$94 billion in damages
- Hurricane Maria caused extensive damages in roads, homes, bridges, schools and powerlines
- Hurricane Maria led to food shortages, water shortages, diseases outbreaks, shutdowns of hospitals and schools, no access to banks and means of currency

## Winds & Pressure

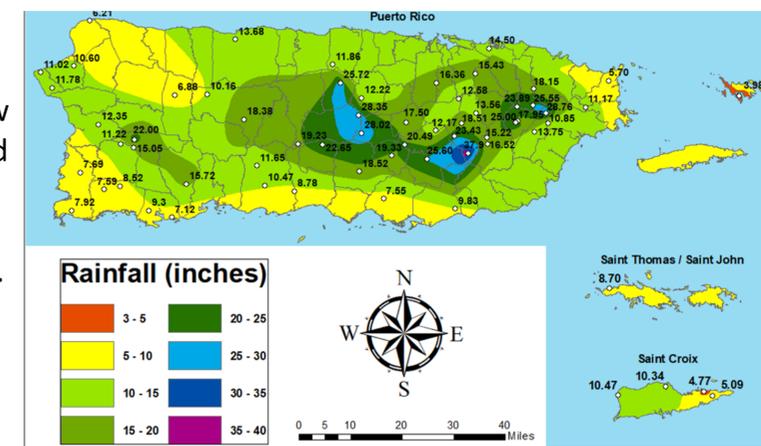
- Maria broke the record for the lowest pressure on record of any hurricane to hit the East Atlantic, with a pressure of 910 mb, previously set by Irma weeks earlier, at 914 mb.
- Maria was reported to have a peak intensity wind at 150 kt on the surface of the ground, and 157kt at 700mb



## Satellite Images and Rainfall



The picture shows the infrared satellite image of Hurricane Maria as it is reaching landfall on the island of Puerto Rico, on the morning of September 20.



The figure to the right show the estimate rainfall caused by Hurricane Maria, during a 48- hour period from Sept. 19 to Sept. 21<sup>st</sup>, 2017.

## Conclusion

- Hurricane Maria is known as the tenth-most destructive and powerful tropical storm to ever hit the Atlantic. The storm caused calamitous damage to the Dominican Republic and, most famously, Puerto Rico.
- , Maria developed gradually until reaching tropical storm levels, thereby escalating into a full-blown hurricane, and quickly intensifying into a Category 5 hurricane upon reaching the islands
- The hurricane caused extensive damage to the islands in its crosshairs, accounting for some of the worst tropical damage the United States has ever experienced. Thousands were killed both during and in the aftermath of Maria, there were billions of dollars in damages to roads, schools, and cities, and people went months with no power on the entire island of Puerto Rico.
- To this day, Puerto Rico and the Dominica, alike, are still reeling from the catastrophic effects of Hurricane Maria.

## Acknowledgment

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