

# **Engineer from Arecibo develops coastal flooding probability models** <sup>[1]</sup>

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## **Calificación:**



No

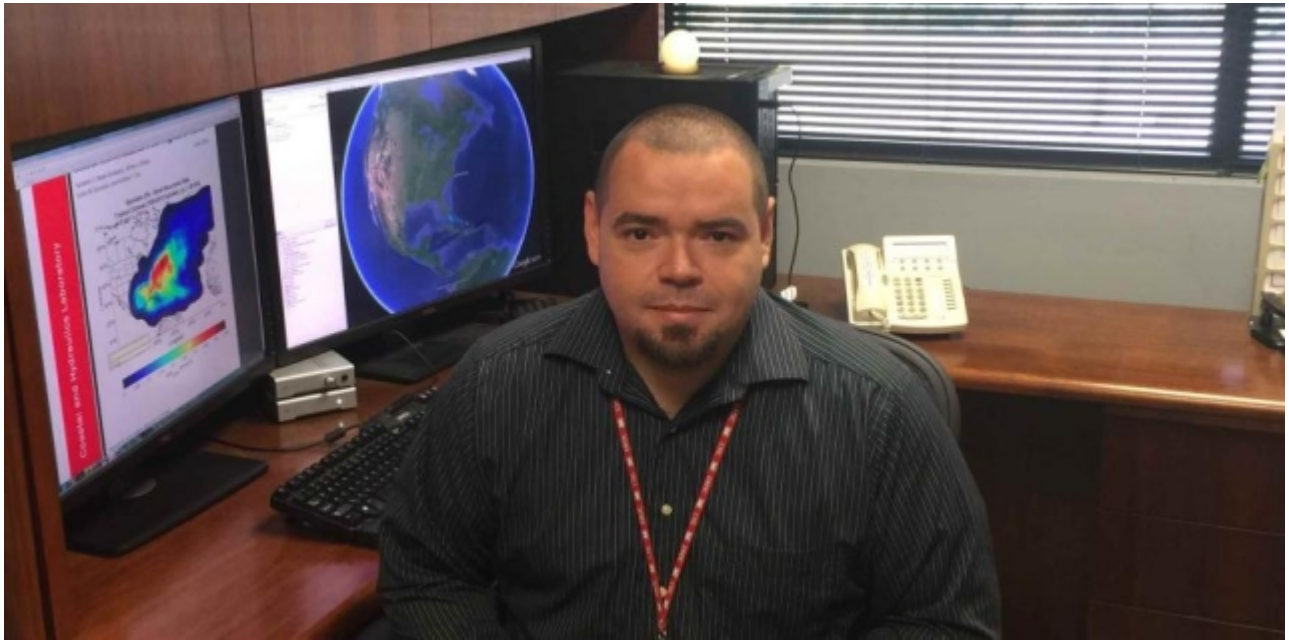
## **CienciaPR Contribution:**

El Nuevo Día <sup>[2]</sup>

## **Original Source:**

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## **By:**



El arecibeño Norberto Carlos Nadal Caraballo estudió su bachillerato, maestría y doctorado en la Universidad de Puerto Rico. (Suministrada)

Al arecibeño Norberto Carlos Nadal Caraballo se le conoce por haber estimado y actualizado la probabilidad de inundaciones costeras para más del 50% de las costas estadounidenses que pueden ser afectadas por huracanes.

\*Norberto Carlos Nadal-Caraballo, U.S. Army Corps of Engineers, develops coastal flooding probability models.

Extreme waves and water levels are critical factors in the design and operation of coastal structures such as breakwaters, jetties, and levees. Coastal structure projects often require extensive review and analysis of data to accurately represent the extreme storm climate of the region of interest. Risk analysis and computation of extreme value statistics are vital to the success of any new design or retrofitting effort of these structures. Historically, such assessments have been performed in a highly simplified manner, typically modeling processes deterministically using return period storm events or employing basic reliability-based methods.

StormSIM is a new software and simulation strategy developed at the U.S. Army Corps of Engineers R&D Center to perform coastal risk analysis based on the joint probability of multiple storm climate parameters. Contrary to traditional techniques, StormSIM employs a time-dependant life-cycle analysis approach that addresses the sequences of storm events causing accumulated structure damage, marginal risk from extreme storms occurring in succession, and added risk from a damaged structure. This new strategy facilitates standardized risk-based analyses of coastal structures and preserves the complex and nonlinear interrelations among all significant wave and water level parameters.

The original article is available in Spanish.

## Content Categories:

- [Atmospheric and Terrestrial Sciences](#) [3]

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