Building resilient communities in Puerto Rico through the StormReady Program

Data Source : NWS WFO San Juan

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BACKGROUND:

As an island, Puerto Rico's vulnerability to meteorological and climatological events is increasingly high. Such vulnerabilities have been more widely exposed by hurricanes Irma and Maria in 2017, which has motivated efforts to invest in a better emergency preparedness plan. The Puerto Rico StormReady Committee strives to guide local communities to be able to prepare, mitigate, respond, and recover by making them aware of the weather hazards and climate vulnerabilities they may experience today and in future years. In 2022, UPRM student volunteer, Harry Rivera, identified the main hazards for all 78 municipalities and compiled them for the 10 Zones of NMEAD (Negociado para el Manejo de Emergencia y Administración de Desastres) of Puerto Rico. For summer of 2023, the PR StormReady Committee focused on grouping the three main hazards and two climate vulnerabilities for all the municipalities of the island from the data collected by Rivera. These would be showcased through captivating, attractive, and self-explained slides that will be used in the NWS SKYWARN Storm Spotter Program and Zones Evaluation process. Additionally, the Committee redrafted the Hazardous Weather Plan Template that will be used to make Puerto Rico StormReady.

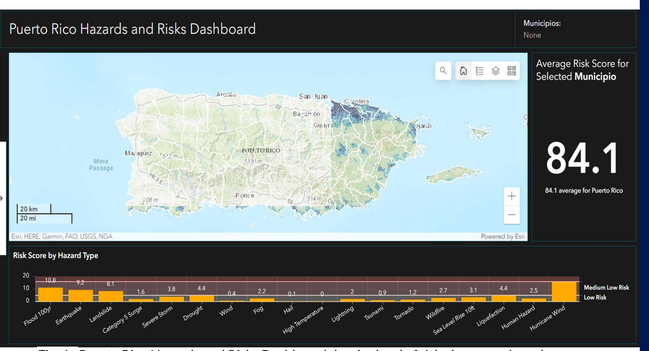

Fig. 1. Puerto Rico Hazards and Risks Dashboard despics level of risk via a score based on hazards or climatological vulnerability for a given area and compares it to the mean score for the entire island.

Making Puerto Rico StormReady through assessment of local hazards and climatological

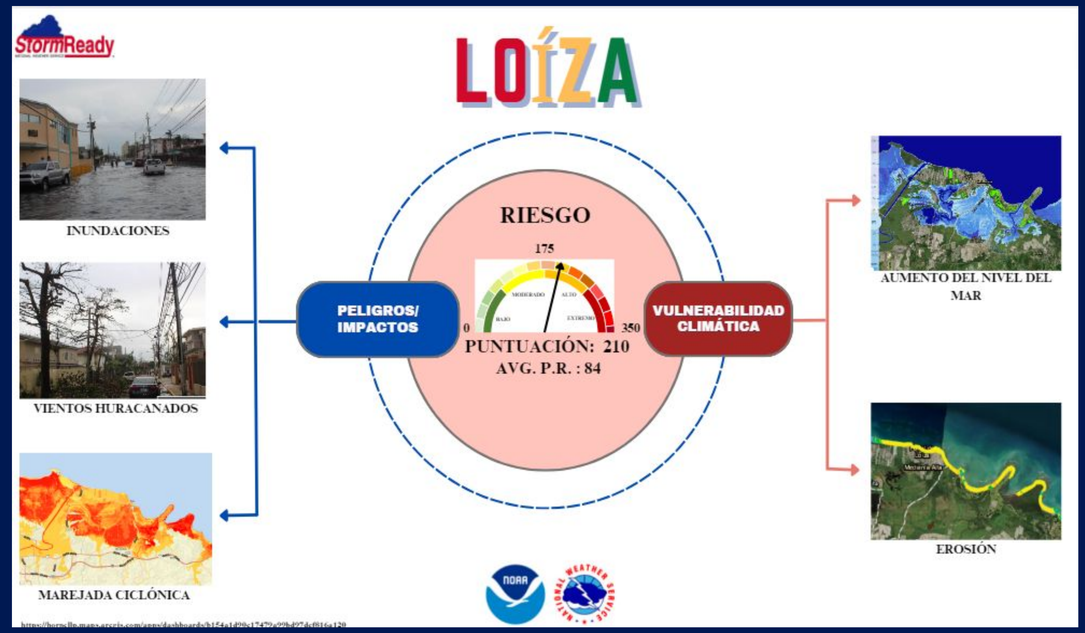

Fig. 2. Sample slide image for the municipality of Loíza showing its top three hazard/ impact (peligro/ impacto) to the left and top two climatological vulnerabilities (vulnerabilidad climatológica) to the right, the score (puntuación) given (210), the average score for Puerto Rico (84), and the level of threat (high) in the middle.

Fig. 3. Example of image from the Hazardous Weather Plan showing how to report different types of conditions, including tornadoes/ waterspouts/ funnel clouds, flooding, hail, winds, and HAZ-MAT spill.

METHODS:

1. Identified three main hazards (meteorological or resulting from meteorological event) and two main climatological vulnerabilities for all 78 municipalities in Puerto Rico using a hazard vulnerability spreadsheet made by Harry Rivera, in addition to the Puerto Rico Hazards and Risks Dashboard (Fig. 1.).
2. Using Canva, slides for each municipality and their respective hazards and climatological vulnerabilities were made. To better organize the municipalities, they were categorized within the 10 zones of NMEAD throughout the slideshow.
3. To better assess the overall threat for each municipality a score was assigned to it (0-350) and a level (low-green, moderate-yellow, high-orange, extreme-red).Their respective score was compared to the mean score of Puerto Rico, which was 84.
4. Pictures, graphs, and maps were utilized to help visualize meteorological hazards, climatological vulnerabilities, and/or then areas prone to them.
5. To personalize the presentation more, each of the colors of the municipality's title is based off the colors of their respective flags.
6. For the Hazardous Weather Plan we began by differentiating watches, warnings, and advisories and classified the products issued by the NWS under their corresponding category.
7. Established ways to identify and report different weather phenomena using images and questions to think about when making the report.
8. Depicted how weather information can be disseminated through the use of a flow chart.
9. Added a description of the municipalities (OMME offices, urbanizations, sectors, neighborhoods, vulnerable areas, available resources, etc.) along with a screenshot of the slide made for each of the municipalities.

DISCUSSION:

- The purpose of this project is to ensure that the island of Puerto Rico is not only well informed of the short term and long hazards it faces but also how to prepare appropriately by having a well organized emergency plan. The StormReady Program does that by having the municipalities prepare a plan, based on their respective individual hazards and vulnerabilities, that can be approved by the NWS and ensure that its citizens are ready for future natural disasters.
- The purpose of the slides is to depict each municipality's top three hazards or meteorological impacts (hurricane winds, flooding, landslides, storm surge thunderstorms, etc.) and top 2 climatological vulnerabilities (sea level rise, heat waves, erosion, forest fires, etc.). Combined with the risk score, people living in those municipalities and the communities have a visual on potential threats and how to prepare for those specific threats.
- The 10 zones of NMEAD, in coordination with the Municipal Emergency Management Offices have developed a logistic plan, Hazardous Weather Plan, for handling severe weather conditions and tropical cyclones. The agencies involved in the implementation of this plan are the following: the National Weather Service (NWS), the Federal Emergency Management Agency (FEMA) and the Municipal Governments that comprise all municipal agencies. Faced with the threat of inclement weather, disasters or the issuance of a storm and/or hurricane watch or warning, the activation of the plan will lead the actions and coordination of the Municipal Offices that comprise the 10 zones and all those in charge of coordinating and evicting residents and visitors throughout the communities exposed and vulnerable to meteorological and atmospheric disasters. Included within the plan are the distinctions between watches, warnings, and advisories and the products issued by the NWS, how to correctly identify and report weather events, how information about weather is shared across different sorts of platforms, and a description of the municipalities with their respective risks and vulnerabilities.

ACKNOWLEDGEMENTS:

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