

## Upcoming Calls

### International Adaptation of the Hazus Earthquake Model

Jesse Rozelle, FEMA  
January 16, 2019

### Flood Risk Assessment for Levee Protected Areas

John Bauer, OR DOGAMI  
March 2019

Sign up for calendar invites by emailing [Hazus-outreach@riskmapcds.com](mailto:Hazus-outreach@riskmapcds.com)

## Upcoming Courses

**E0179: Hazus for Disaster Ops**  
March 18 – 21, 2019

**E0170: Hazus for Hurricane**  
March 25 – 28, 2019

**L0317: Comprehensive Data Management for Hazus**  
April 23 – 26, 2019

Download the course schedule and enroll at the [EMI Courses Page](#)

Contact Paul Ganem at EMI to get your certificates today!  
[paul.ganem@fema.dhs.gov](mailto:paul.ganem@fema.dhs.gov)

## Contact Us

**Hazus Outreach Team**  
[Hazus-outreach@riskmapcds.com](mailto:Hazus-outreach@riskmapcds.com)

**Hazus Help Desk**  
[Hazus-support@riskmapcds.com](mailto:Hazus-support@riskmapcds.com)

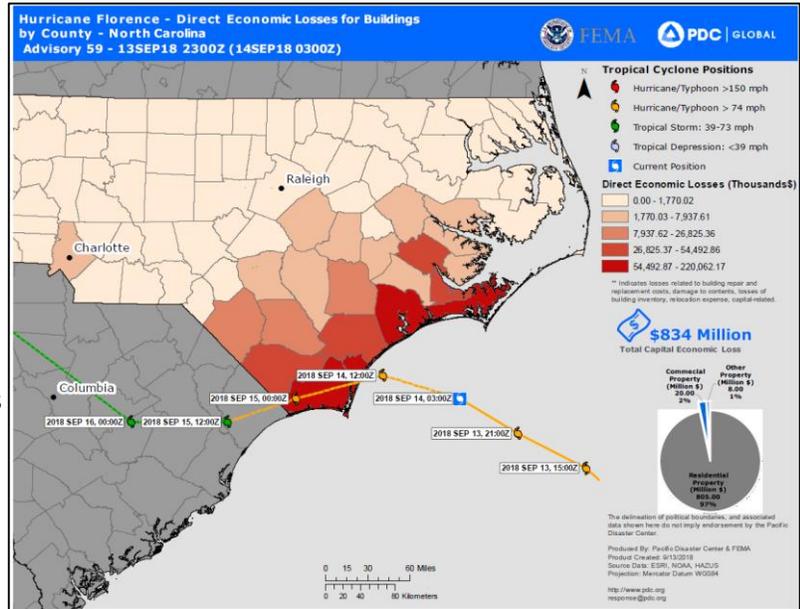
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 [@HazusCommunity](#)

# FEMA Teams with PDC to Aid Lifesaving Efforts Using Hazus Hurricane Model

Pacific Disaster Center (PDC) and FEMA have once again teamed up to help disaster management decision makers throughout the United States access the most timely and accurate information about hurricane impacts and potential needs. Working together, FEMA and PDC leveraged their combined modeling expertise with PDC's information visualization and data source integration capabilities to develop enhanced wind loss products that help critical decision making before, during, and after major hurricanes make landfall.



Direct economic losses for buildings estimated from the Hazus Hurricane Wind loss model for Hurricane Florence (2018)

The two organizations are also combining resources to provide 24-hour Hazus modeling capabilities during major hurricanes. Because PDC and FEMA maintain locations in multiple time zones, by working together they can now run Hazus models, distribute results, and create a final run of record used for post-impact recovery planning as soon as new advisories become available.

The coordination between PDC and FEMA began in 2016 and continued into the catastrophic 2017 season, which included hurricanes Harvey, Irma, and Maria. Since then, the two organizations have been working together to support response and recovery resource allocation and communication needs for Hurricane Lane in Hawaii, as well as hurricanes Florence and Michael on the U.S. mainland in 2018.

Coordinated efforts supported disaster management agencies at every level, incorporating enhanced data specific to the Region whenever possible. For instance, in 2017, the Florida Division of Emergency Management provided the PDC modeling team with essential facility data to support more accurate modeling and estimations during Hurricane Irma. This data was incorporated into Hazus and used to support response and recovery efforts. (Continued on Page 2)

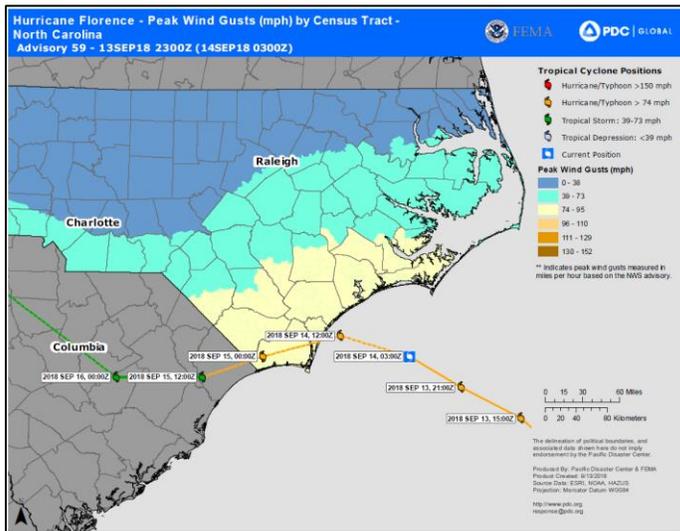
**Andrea Chatman** is a Disaster Management Applications Analyst at the Pacific Disaster Center in Hawaii. She has worked in the field of disaster modeling since 2001, specifically in the analysis of data output and dissemination of products for support to emergency managers and disaster organizations within PDC's Area of Responsibility. She has a broad background in physical sciences, with a Bachelor's Degree in Environmental Geology and a Master's Degree in Disaster Science.



## FEMA Joins Forces with PDC to Leverage Hazus Hurricane Model

Continued from Page 1 – Hazus model reports are reviewed by both PDC and FEMA using quality control and analysis processes that reduce the chance of errors—both in the implementation of the model runs and in the analysis of the final results. Modeled results are compared with those from past forecast advisories for major variations and differences. If the QAQC process yields an anomaly or discrepancy in the model, the joint teams will conduct additional analyses to validate the output and ensure the quality of the information is suitable for decision making.

With Hurricane Irma in 2017, for example, the forecast path changed continuously, producing large swings in estimated losses for Miami-Dade, Broward, and Palm Beach regions of Florida. In order to avoid confusion as the hurricane approached, reports emphasized the uncertainty of modeled results due to changes in hurricane track with each new forecast advisory.



Peak Wind Gusts (mph) estimated from the Hazus Hurricane Wind Loss Model for Hurricane Florence

By transitioning from forecast wind field data to observed wind field data at hurricane landfall, estimated losses produced by the Hazus model represent the observed losses more accurately. This is because forecast wind speed from associated advisories are applied across entire quadrants with a conservative buffer to reflect maximum potential risk.

Beyond the ongoing development and enhancements to refine Hazus, PDC and FEMA continue to partner in an effort to advance the quality and availability of scientific data, information, and methodologies for decision makers. In advance of the 2019 Hurricane Season, PDC and FEMA are working together to improve modeling of the estimated likelihood of impacts to lifelines and increasing the availability of critical information to support decision makers. This partnership not only helps optimize limited resources and reduce potential duplication, but it enhances data quality and increases overall capabilities between the two organizations who share a common mission to reduce risk and save lives.

For the largest events, FEMA assigns wind field data collection to the National Institute of Science and Technology (NIST) to provide observational data. This observational data is used to generate the three-second peak gust for each Census Tract. Hazus loss model results based on these observed wind field data have been shown to correlate well with actual observed damages.



### Hazus Nationwide Earthquake Analysis Used for NEHRP Grant Funding

“The National Earthquake Hazards Reduction Program (NEHRP) leads the federal government’s efforts to reduce the fatalities, injuries and property losses caused by earthquakes. To support local earthquake safety and resilience activities, FEMA awards cooperative agreements to select states and territories with moderate to high seismic risks to fund one or more of eligible activities. The purpose is to support the establishment of earthquake hazards reduction programming and the implementation of earthquake safety, mitigation, and resilience activities at the local level.



Read the full study: <https://www.fema.gov>

The states and territories selected to participate in this program, their requirements under the program, and their funding allocations are determined based on a combination of statutory and regulatory requirements, program priorities, available funding, and consideration of risk information gathered from the U.S. Geological Survey National Seismic Hazard Maps, the International Residential Code Seismic Design Categories, and Hazus Estimated Annualized Earthquake Losses for the United States (FEMA P-366).” From: <https://www.fema.gov/nehrrp-grant-program>



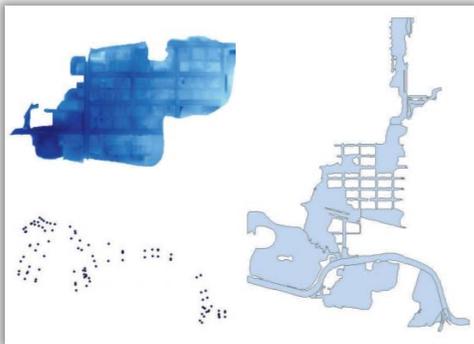
## Hazus User Tip

### Create a Depth Grid using DFIRM Data

Depth grids provide the most complete source of flood information for Hazus Flood loss modeling. However, depth grids can be difficult to find or create because the traditional engineering-grade data used to build them can be prohibitively expensive to produce.

The Hazus Team published a step-by-step tutorial for building a basic depth grid for the 100-year probabilistic flood in your study area. Below is a preview of this relatively simple method. Find the full instructions at:

<https://www.fema.gov/media-library>



1

Download DEM terrain data (LiDAR-derived is best) and the latest Digital Flood Insurance Rate Map for your area.

2

Interpolate a flood surface using elevation values from the DFIRM data at points along mapped cross-sections in your area.

3

Subtract the DEM surface from the interpolated water surface preserving positive depth values and masking to the floodplain polygon.

## Coming February 2019: Hazus 4.2 Service Pack 2

A new Hazus Service Pack will be available for download online in February and includes a variety of bug fixes and software enhancements that will streamline the modeling experience for users.

### Highlights

- Users can now search for available USGS ShakeMap scenario data directly from the Hazus interface and download those data for incorporation in their modeling project. Hazard data from the USGS ShakeMap Scenario library should be used to generate credible Hazus risk assessments for real-time, historic or worst-case earthquake events.



The USGS provides hazard data for nearly 800 authoritative shaking scenarios across the continental U.S. Hazus users can now integrate these scenario data directly.

- Users can now edit damage function parameters for highway, rail and light rail facilities in order to build a more customized risk model within Hazus.
- Hazus Earthquake now automatically incorporates USGS amplified probabilistic ground motion data, which take into account soil geography across the U.S. These more accurate hazard data will provide more accurate earthquake loss results.
- Hazus Flood now provides users with a more intuitive depth grid data import interface. The new interface can be used to more effectively QA/QC user-defined flood data and monitor data import progress.

### Sign up for GovDelivery to receive release updates about the upcoming Hazus 4.2 Service Pack!

<https://public.govdelivery.com>





## Program Manager's Corner

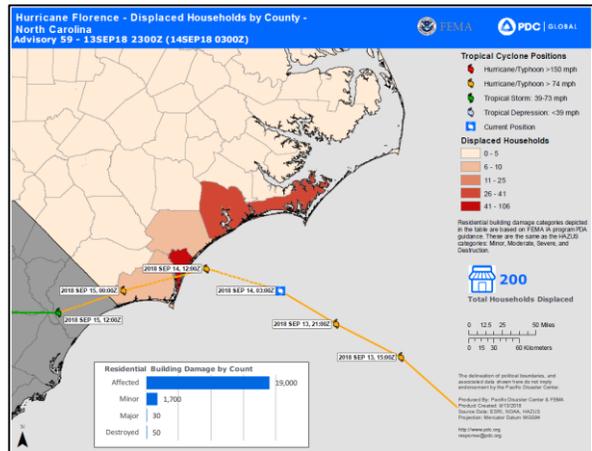
Greetings,

It's an exciting time for the Hazus Program, as we look back on a successful 2018 and forward to a bright 2019 and beyond. In 2018, we saw Hazus modelling efforts help augment the incredibly challenging efforts emergency managers face increasingly each year. During Hurricanes Florence and Michael, Hazus was used by the emergency management community to better understand the extent of impacts from these devastating hurricanes so that disaster survivors could be better supported. We saw increasingly innovative approaches to incorporating Hazus into the full emergency management cycle with these storms, and are always proud when Hazus can make a positive difference to those affected.

We're also continuing our work to increase Hazus modelling capability for Puerto Rico and the U.S. Virgin Islands for 2019, and hope to better support Guam, the Marianas Islands, and American Samoa by 2020. Bringing all of the U.S. territories up to the same modelling capability as the Continental U.S. is a big priority for us, and we're going to keep working to make that happen.

OpenHazus is the future of Hazus, and we're meticulously researching the best way to move forward. The future of risk modelling sciences and the needs of our users are driving everything we do. Transitioning the Hazus platform while simultaneously supporting and improving legacy Hazus is our mission.

In November, the Hazus team met for a full week to discuss OpenHazus and what we want to achieve as we take an already excellent model to the next level. We want the model to meet the needs of everyone passionate about disaster risk reduction – emergency responders, members of the research community, mitigation planners, and everyone in between. We are following a Whole Community approach toward development in order to support all phases of emergency management, and we hope to leverage the latest in science and technology to quantify risk as we move forward.



Displaced households modeled using Hazus during Hurricane Florence (2018)

Lastly, I want to give a big thanks to Andrea Jackman from the Hazus helpdesk. Those who have sought technical help with Hazus modelling in the past likely benefited from her dedicated support in order to accomplish your mission. Database formatting, hazard sources, software conflicts, and short deadlines are common challenges in Hazus and the risk modelling discipline in general. Andrea has worked tirelessly to make the Hazus helpdesk a valuable resource in the Hazus community for 6 years. She is moving on to new challenges, and will be deeply missed by the Hazus team. Thank you, Andrea!

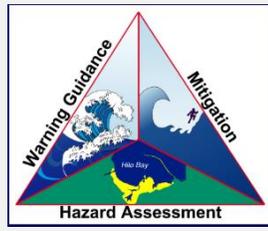
Looking forward to a great 2019. Keep modelling!

Jesse Rozelle, Hazus Program Manager



## Hazus Presents

**National Tsunami Hazard Mitigation Program Annual Meeting**  
San Diego, CA  
January 2019



Doug Bausch, Hazus Program Manager for NiyamIT, Inc., will present on:

- 1 Tsunami loss estimates for an earthquake triggered landslide along the Coronado Escarpment modeled in support of the EERI San Diego-Tijuana Earthquake Scenario
- 2 Average annualized tsunami loss assessment for Honolulu City and County Mitigation Plan results including nearly \$100M in building losses alone

See the full meeting agenda: <https://nws.weather.gov/nthmp>



## Save the Date!

**Hazus Annual Conference**  
Washington, DC – Summer 2019

Join us to discuss the latest natural hazard risk modeling research and the future of free and open source modeling tools delivered by the Hazus Program.

Presentation suggestions? Email your ideas to the Hazus Team at [Hazus-outreach@riskmapcds.com](mailto:Hazus-outreach@riskmapcds.com).



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