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Upcoming Call

National Hazus User Group (HUG) Conference Call

Next call: January 9, 2018
Sign up for calendar invites by emailing Hazus-outreach@riskmapcdfs.com

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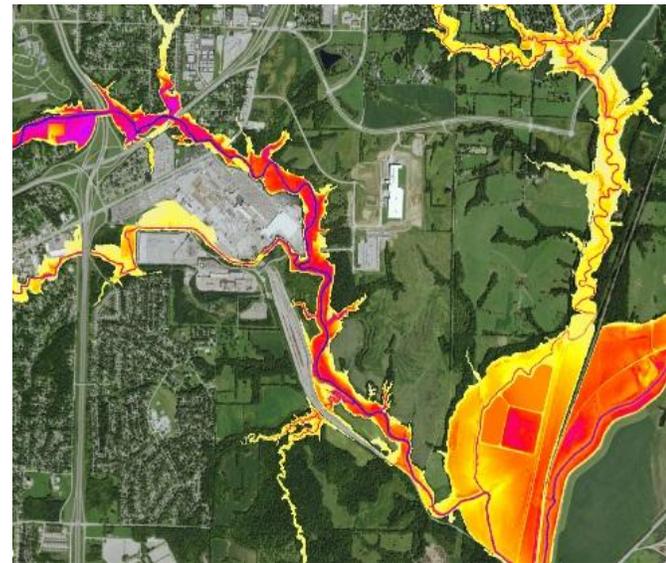
Featured Stories

Hazus Supports the 2018 Missouri State Hazard Mitigation Plan Update

By The Missouri State Emergency Management Agency (Missouri SEMA)

The State of Missouri Hazard Mitigation Plan Team is using Hazus to assess riverine flooding and earthquake risk for all 114 counties plus the City of St. Louis in Missouri. Hazard data inputs for the Hazus Level 2 Riverine Flood Analysis include extensive use of FEMA Special Flood Hazard Area Risk MAP Flood Risk data. In total, 98 out of 114 counties used these products in the analysis.

Missouri SEMA primarily used depth grids, which indicate the depth of water associated with the 1 percent annual chance (100 year) floodplain identified by FEMA Special Flood Hazard Area designation (Figure 1).



In the previous State Plan, the number of structures at risk was based on the default census block inventory available in Hazus. Missouri SEMA noted that rounding errors in these data could produce results with limited accuracy. The state addressed this limitation in the 2018 Hazard Mitigation Plan by enhancing the Hazus analysis with structure inventory data developed by the University of Missouri GIS department (MSDIS). MSDIS created a point and/or footprint dataset that includes every roof line in every county in the state of Missouri with associated structural attributes like building type. MSDIS intersected the dataset with the 100-year floodplain depth grid outside of the Hazus environment.

These datasets allowed the Hazard Mitigation Plan Analysis to provide an estimated number of structures (by type) exposed to flood risk with Flood Zone and estimated depth of water attributed to each structure. Where available, Missouri SEMA also applied Risk MAP's Percent Annual Chance and 30 Year Percent Chance data. This dataset will become a powerful tool for Mitigation Action identification in Missouri.

The Hazard Mitigation Plan Team also completed an earthquake risk assessment using Hazus to develop a Level 1 statewide loss analysis for the 2,500-year probabilistic (2% in 50 years) earthquake scenario, including summary of results by county. Missouri SEMA completed this analysis using Hazus 4.0, which includes updated census data and updated shake grids developed by USGS. (continued on page 2)

The Missouri State Hazard Mitigation Plan 2018 Update, Continued

In addition to the statewide Level 1 analysis, the Missouri SEMA also conducted a Level 2 analysis with enhancements to both the hazard data and specific inventory inputs to the Hazus model. Hazard data enhancements included Soils and Liquefaction data and Groundwater Depth data. Inventory input enhancements included the following select critical facilities important to operations: fire stations, schools, medical care facilities, bridges, and hazardous materials facilities (which are of concern during earthquake events).

The Missouri SEMA team formatted the inventory data for use in Hazus using the Hazus Comprehensive Data Management System (CDMS) tool which syncs data and attributes fields necessary for Hazus analysis before importing the enhanced data into a Hazus study region. Missouri SEMA adjusted the building default seismic design level in Hazus from moderate to low to better reflect the general lack of seismic design for buildings in the Midwest. The analysis identified at-risk facilities and bridges for summary in reports and inclusion in the hazard mitigation plan.

Multi-Agency Collaboration Uses Hazus for NOAA Analysis of Hurricane Impacts in Coastal Georgia

By Kevin Mickey kmickey@iupui.edu

The Georgia Coastal Management Program, in collaboration with The Polis Center at Indiana University Purdue University Indianapolis (IUPUI) and the Space Science and Engineering Center at the University of Wisconsin, have recently completed a NOAA-funded study that provides a regional assessment of probable storm-scenarios for coastal communities. The study used Hazus to run innovative simulations of the potential predicted effects of a warming climate, such as sea-level rise and more intense coastal storms. Figure 2 shows an example.

To capture high and low frequency hurricane events in coastal Georgia, the team analyzed three hurricane scenarios and their associated storm surge:

- A high-frequency Category 1 hurricane. Wind risk data within Hazus estimate that Category 1 hurricanes have a 5% annual chance (20-year return period) to strike coastal Georgia. The most extreme hurricanes to impact Georgia were in 1893 (strong CAT 3) and 1898 (CAT 4)
- To simulate an extreme, high-impact, low frequency hurricane event, the team used a Category 4 hurricane that skirts the Georgia coastline with current sea levels. This orientation to the coastline maximizes the hurricane's wind and storm surge impacts.
- A Category 5 hurricane has never made landfall in Georgia. This event has a less than 0.1% annual chance of occurrence. However, changes to sea surface temperatures create potential for stronger hurricanes in the Atlantic Ocean. Therefore, the team simulated a Category 5 hurricane with a direct landfall along the Georgia coastline to capture the potential impacts from a stronger storm under future sea surface temperatures.

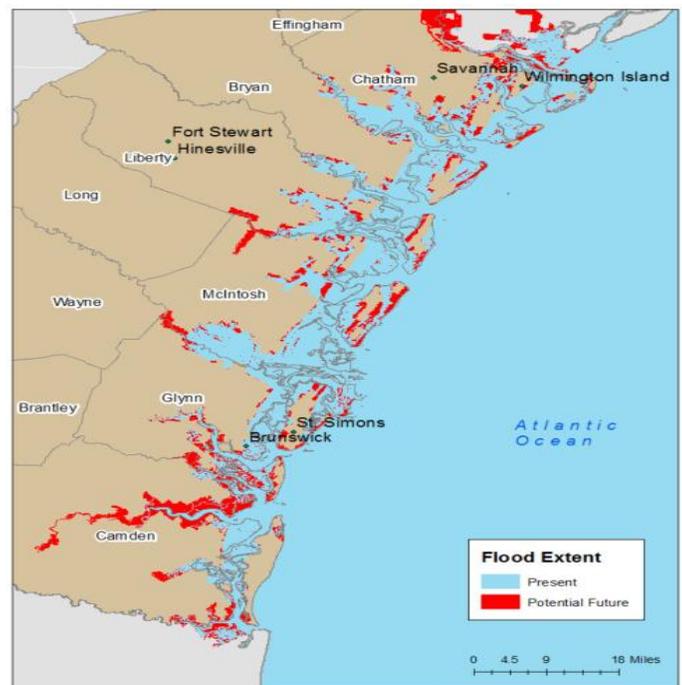


Figure 2: Category 1 hurricane with present ocean conditions compared with a worst case storm surge under potential future sea level rise conditions

The team then simulated each scenario using a 1-meter rise in sea level. The team compared the baseline and future conditions of the Hazus 3.2 scenario outputs to demonstrate the increased risk due to rising sea surface temperatures and rising sea levels. (continued on page 3)

Multi-Agency Collaboration Uses Hazus for NOAA Analysis of Hurricane Impacts in Coastal Georgia, Continued

The team analyzed areas along streams and rivers in coastal Georgia to capture impacts of rainfall from hurricanes. The team completed the scenario twice, first under current sea-level conditions and second with a 1-meter increase in sea levels. These two scenarios, along with the wind and storm surge simulations, captured impacts from hurricanes landfalling in Georgia under current and potential climates. A detailed inventory of buildings within the study area informed the analysis.

This project increases awareness and understanding of Georgia's coastal vulnerability to long-term hazards to better inform local decision makers and coastal stakeholders. Their appreciation of risks and vulnerabilities is critical for the success of long-term planning.

The team is currently engaged in a new NOAA-funded study that examines the effectiveness of green infrastructure on mitigating current and future conditions. The study area consists of portions of Liberty and Chatham Counties and may have ramifications for the entire Georgia coastline as well as coastal communities outside of Georgia.

Announcements

Newsletter: We have a new name! The Hazus Quarterly will replace the former bi-monthly HotZone. Switching to a quarterly format allows us to provide more detail and program information in each publication. Please continue to send us your ideas for articles, and your Hazus success stories!

Hazus Leaders and CoP Calls: In an effort to address more detailed methodology and software questions, we are discontinuing the Hazus Leaders and Hazus CoP calls. These calls will be merged into a new quarterly "Hazus Program Priority Forum". Please watch out for an invitation or send an email to [Hazus Outreach](#) if you would like to be added to these calls. The goal will be to discuss enhancement requests for upcoming releases, provide more technical training on single, specific issues, and to address any questions or recommendations from users.

Hazus Science and Technology Update

Hazus Version 4.2 Coming January 2018

Hazus 4.2 is going to be the fastest, sleekest version of Hazus yet. In this version, look for the following changes:

- ArcGIS 10.5.1 compatibility, and flexibility to install on future versions of ArcGIS
- Major processing time reductions for hydrology and hydraulics within level 1 flood
- Additional supported formats for level 2 flood depth grid import
- High resolution ShakeMaps now compatible, and with lighting fast import times
- Restoration of the Fire Following Earthquake (FFE) module
- Major improvements to CDMS for easier import of parcel structure data
- Numerous upgrades making Hazus easier to use for US territories and custom international applications
- Legacy bug fixes



Hazus User Tips

1 Hazus Export Tool – have you ever thought that exporting all of your geospatial results layers out of the Hazus model was tedious? Not anymore! With each version of Hazus we now include an easy to use python script for exporting all results available in the **C:\Program Files(x86)\Hazus-MH\Bin\Tools** folder.

2 Older Hazus HPR's – Hazus currently only supports the importing of HPR files from one version prior to your current version. You can however rename an older hpr file to .zip and access the SQL tables and hazard datasets directly outside of Hazus.

FIMA Risk Management Directorate's Natural Hazards Risk Assessment Program

FEMA's Hazus Program is part of the FIMA Risk Management Directorate's Natural Hazards Risk Assessment Program.

For questions about the Natural Hazards Risk Assessment Program contact FEMA-NHRAP@fema.dhs.gov

EMI Courses

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

Sign up for GovDelivery
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Success Stories

2017 Hurricane Season: FEMA Headquarters, Region IV, Region VIII, and the Pacific Disaster Center worked together to develop Hazus wind loss estimates for Hurricane's Harvey, Irma, and Nate for each National Hurricane Center advisory beginning 72 hours before landfall. Results for each of these events were used to drive response priorities at the federal and state level. After each of the storms made landfall, a run of record was produced using both Hurrevac generated and observed wind field data.

For those wanting to learn more about this work, Casey Zuzak, FEMA Region VIII – Risk Analyst, provided a presentation during the December National HUG conference call on “Using Hazus During 2017 Hurricane Season”, which can be downloaded for free from the [Hazus Community iTunes](#) podcast library.

South Dakota Flood Risk Assessment: FEMA and its floodplain mapping partners have been able to leverage new base level engineering flood risk data to create flood loss assessments for parts of parts of Eastern South Dakota. Each countywide risk assessment uses the new draft 100 year flood depth grids and the general building stock so that local emergency managers can better understand their flood risk.

Program Manager's Corner

Greetings! As a Hazus user for many years, it has been incredibly exciting working with all of you as the new Hazus Program Manager. In the past year, we've been working to bring new resources and energy to Hazus software modernization, scientific methods enhancements, and the overall user experience. I'm proud to say that the priorities for the Hazus Program are driven by you, the user community, through the collaboratively developed Hazus Strategic Plan.

In particular, we are excited to announce a complete redesign of the Hazus training. We're working with the Emergency Management Institute (EMI), to rewrite all Hazus training materials to incorporate modern risk assessment techniques, and to align with Hazus 4.2 improvements. We're also making training more easily accessible on the web by developing short video tutorials that tackle common Hazus tasks.

We're also committed to incorporating more insights from the scientific community into Hazus. Through a collaborative effort with the US. Geological Survey National Earthquake Information Center, we're researching a methodology for estimating annualized earthquake losses to the nation's infrastructure. This methodology will eventually be used to inform a nationwide study that quantifies earthquake risk to infrastructure, with the goal of informing future mitigation efforts.

Next year will be a busy one for Hazus, and we look forward to seeing you all at the Annual Hazus User conference in the spring!

Happy Holidays,
Jesse Rozelle, Hazus Program Manager



Hazus User Conference

Postponed to Spring 2018

The Annual Hazus User Conference has been POSTPONED to Spring 2018. Volunteers from the South Carolina Emergency Management Division and College of Charleston Lowcountry Hazards Center are organizing the event.

We apologize for any inconvenience this may have caused.

For questions about registration fee refunds, please contact Norm Levine at LevineN@cofc.edu

Are you interested in presenting in Spring 2018?

- 1 Please contact Charlie Kaufman at ckaufman@emd.sc.gov
- 2 Abstracts should fall into one of the following tracks:
General Hazus, Education and Research, or Emergency Management
- 3 For questions about the Hazus Conference, please email Hazus-outreach@riskmapcds.com



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