Webinar Prep

• Due to the large attendance, all participants are muted for the duration of the session to prevent background noise.
  • Please use the Q&A functionality within Zoom for questions that are relevant to the whole group.
  • We will address these Q&A at the end of the webinar!

• This webinar will be recorded.

• We want to hear your thoughts on flood modeling!
  • Participate using the instructions below

[QR code image] OR use this QR code!
Flood Modeling Needs & Products

March 26, 2020

Menti.com, code 92 83 16
Future EM Geo Forum Dates

May EM Geo Forum
Details Coming Soon!

https://www.napsgfoundation.org/events/

Menti.com, code 92 83 16
Modeling and Data Working Group (MDWG)

Meeting the 3rd Wednesday of the month
from 2:00-3:30 PM ET

Adobe Connect:  https://fema.connectsolutions.com/mdwg-monthly-meeting/
Conference Bridge:  800-320-4330, Passcode: 399137#

Email:  fema-mdwg@fema.dhs.gov
Welcome

Chris Vaughan, GIO, FEMA
Today’s Presenters

Katherine Picchione – Crowdsourcing Specialist, FEMA
Casey Zuzak – NHRAP Senior Risk Analyst, FEMA
Adam Barker – Geospatial Analyst, FEMA
Matt Welshans – Geospatial Information Unit Lead, FEMA
Phillip Ulbrich – Emergency Management Specialist, FEMA
About NAPSG Foundation

Our Vision
A Nation of emergency responders and leaders equipped with the knowledge and skills in applying technology and data to change the outcome for survivors.

• 501(c)(3) Non-profit organization established in 2005
• +20,000 member network: Public Safety leaders, first responders, and GIS practitioners
• Board of Directors comprised of public safety & emergency management industry leaders
How Do We Do It

Defining and promulgating consistent best practices

Fostering regional collaboration through implementation

Building capacity in using innovative technology

Transferring knowledge and skills

Tech Assistance

Education & Training

Exercises & Simulations

National Guidelines and Standards
Today’s Attendees

Total Participants on Map

132

Type of Jurisdiction
- Federal Government 40.15%
- NGO 11.29%
- State Government 11.58%
- City/County Government 12.08%
- Private Sector 13.64%
- University 3.69%
- Other 6.00%

Sector Affiliation
- Emergency Management
- Public Works/Utilities
- Fire Services
- Mass Care
- Search & Rescue
- Other
Objectives

1. Learn about flood modeling needs in various stages of a flood event.

2. Gain an understanding of available flood modeling products and their corresponding uses and limitations.

3. Learn about the uses of modeled versus observation-derived depth-grid products.

4. Gain insight into FEMA’s approach to flood modeling.
Planning for a Flood Event in the Wake of a Pandemic

Katherine Picchione
Crowdsourcing Specialist
Response Geospatial Office | Planning and Exercise Division
Carrying Out Public Programs in a pandemic environment

- Many programs rely on field staff. COVID-19 presents an unprecedented threat to individuals and communities, making field visits extremely risky.

- You can enable remote work with geospatial tools!

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<thead>
<tr>
<th>Data Sources</th>
<th>Production</th>
<th>Applications</th>
<th>Policy</th>
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</thead>
<tbody>
<tr>
<td>Online forms</td>
<td>2D/3D imagery analysis</td>
<td>Virtual inspections</td>
<td>Alternate Procedures</td>
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<tr>
<td>Cell Phones</td>
<td>Livestream</td>
<td>Triage projects</td>
<td>Privacy</td>
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<td>Aerial imagery</td>
<td>Hazard exposure</td>
<td>Decision support tools</td>
<td>Risk reduction</td>
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<td>Internet of Things</td>
<td>Predictive analytics</td>
<td>Cost models</td>
<td>Pre-position contracts</td>
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<td>Model outputs</td>
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e.g. Use photos and flood extents to streamline individual assistance for applicants with a high likelihood of damage.
Design solutions like an engineer

1. Identify specific problems and needs
2. Understand “quick wins”
3. Brainstorm technology options
4. Brainstorm policy/program options
5. Work with policy makers and technologists to develop the best solution
6. Implement and iterate
Natural Hazards Risk Assessment Program
Disaster Response Work

Casey Zuzak, GISP
NHRAP Senior Risk Analyst
Risk Management Directorate | Resilience
The NHRAP will provide a common understanding of hazard and consequence data to reduce disaster suffering.
Goals of the NHRAP

1. Institutionalize an innovative and integrated risk assessment process to link risk with policy and program implementation.

2. Leverage partnerships with hazard identification experts and other FEMA program areas to promote use of credible risk assessment data and practices.

3. Empower states, local governments, tribes, and territories to reduce disaster suffering and to contribute to a more resilient nation.
Disaster Support – National Flood Insurance Program

- NHRAP served as Hazus wind modeling SME to support Hurricane Florence response
  - Improves confidence by conducting QA/QC of model results
  - Ensures HQ and Regions are using the same planning factors

- NHRAP provides NFIP Analytics Team Estimates
  - Coordination with RGO, IWRSS, and PNNL on best available flood hazard information
  - Working with FEMA Coastal Engineers for surge
  - Intersect with FEMA NFIP data to understand the impact of the disaster
Development of Post Event Flood Depth Grids

- NHRAP Create post-event depth grids from USGS collected High Water Mark data
  - Publish data to disaster geoplatform FTP

USGS Flood Event Viewer

Hazus FAST

https://www.fema.gov/media-library-data/1561466386519-b15dc591acf1738944b43f42a8b01d7/Hazus_Flood_Model_SOP_level2analysis.pdf
Flood Mapping Use Cases: FEMA Response

Adam Barker, PhD
Geospatial Analyst
Response Geospatial Office
How many people will be affected by an event and what is the extent of the damage?

And Beyond:
- Which roads are damaged?
- Which CIKR are likely damaged?
- Which communities are isolated?
- How many structures are destroyed?
- What is the extent of debris?
How do we assess the impact and identify damage?

In-house approach:
So what exactly are the needs of Response

**Pre-event**: Where will the water be and how much?

- The need: Rapid-response predictive flood models to assess the impact
- Time: Ideally 72 to 48 hours before an event (if possible)
- We will absolutely compromise on accuracy and precision in favor of a timely product
- Goal: Provide situational awareness to guide leadership decision making and assess resource requirements

**Post-event**: Where and how deep is the water and for how long?

- The need: Observation-validated flood inundation map
- Time: The RGO is required to provide initial damage assessments *within 72 hours* of the event
- Goal: Assess the damage scope to expedite the declaration process (if need be), refine resource needs, and gather data that will be used by other functional areas at different times
Flood Modeling in Field Disaster Response

Matt Welshans
GIS Unit Leader
FEMA National IMAT Blue
GIS in the Field: Response GIS Teams

- Integration with state and other federal GIS teams in larger-scale responses
- Remote support from Region GIS teams in smaller-scale recovery only operations.
- Provide basic information for:
  - Situational Awareness
  - Decision Making (Crisis Action Planning)
  - Future Planning (Modeling/Forecasting)
- Updated information is always a need!
Flood Modeling: How We Use It in Response Operations

• Stand-in for inundation layer
  • Scope of population affected
  • Potential damage to infrastructure
• More fidelity than FEMA Flood Zones
• Used for scenario building, planning factors, areas of concern.
  • Needed within tight deadlines for high level decisions on assets and forces needed.
  • Reliable, rapid timeframes needed to set expectations while incident is occurring.
  • Perfection not needed, but confidence should be indicated.
Current Flood Modeling Suite

HAZUS Flood Damage Model

RIFT – Rapid Infrastructure Flood Tool

SLOSH – Sea, Lake, Overland Surges from Hurricanes

High Water Marks (once available)
Next Steps: A Wish List

• First Floor Elevations
  • Mitigating Factor
  • Prevents overestimation of flood damage

• Vector data
  • Allows quick analysis in online environment
  • Bucketed values for quick analysis

• Timely Scenarios/Confidence for Planning
  • Best-case
  • Worst-case
  • Most likely case
The Resilient Recovery Pilot is a coordination effort among FEMA, various federal and State agencies, and non-governmental partners in the State of Louisiana.

The Pilot will support jurisdictions at the watershed level to integrate recovery, resilience, and hazard mitigation through a robust team of subject matter experts (SMEs).
Louisiana Resilient – Principal Innovations

• Watershed-based Regionalism

• Integrate Resilience and Recovery Support

• Transition to a Fully State-Resourced Process
Louisiana Resilient – Pilot Goals

• Reduce future disaster cost

• Build State and Local Capacity

• Leverage Findings to Improve Federal Action
Call to Action

• Geospatial Game-Plan for a Flood Event (Template)
  • What is yours?

• Core Information Needs
  • Who needs to know what and when?

• Review your Agency’s Flood Response Plan
  • Critical considerations during COVID-19
What’s Next?

Resources

- Louisiana Disaster Risk and Recover Assessment Dashboard (Requires FEMA Login)
- Denham Springs Recovery Plan, Louisiana Resilient Recovery Pilot ConOps, and LaWRS Main Section YB712
- Core Information Needs - GIS Resources (filter for flood)
- Pin2Flood - Living Atlas
- Prioritizing Operations Support Tool (POST) Dashboard
- Natural Hazards Risk Assessment Program (NHRAP) Website
Thank you!

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Charlotte Abel, NAPSG
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