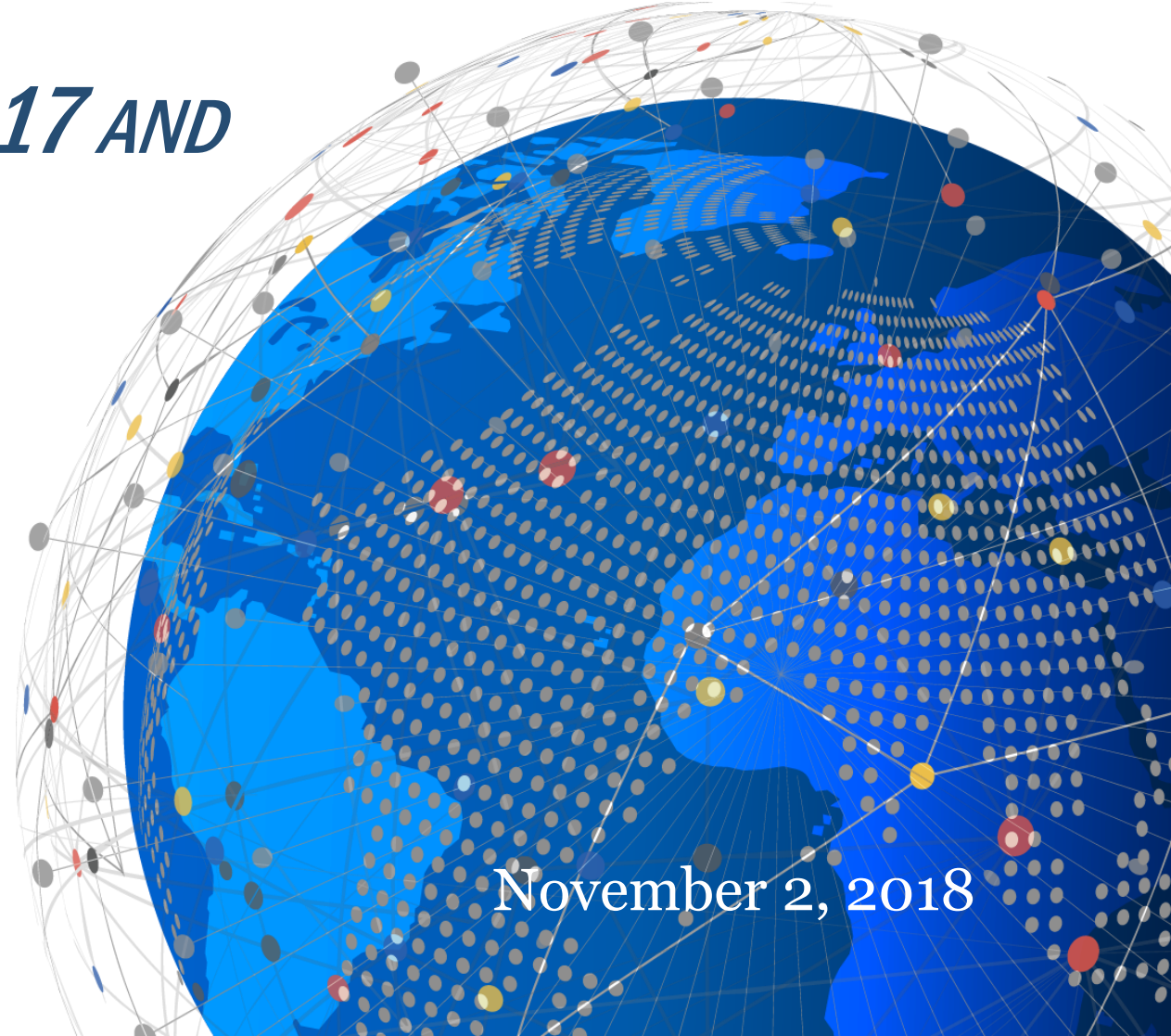


GIS @ FEMA

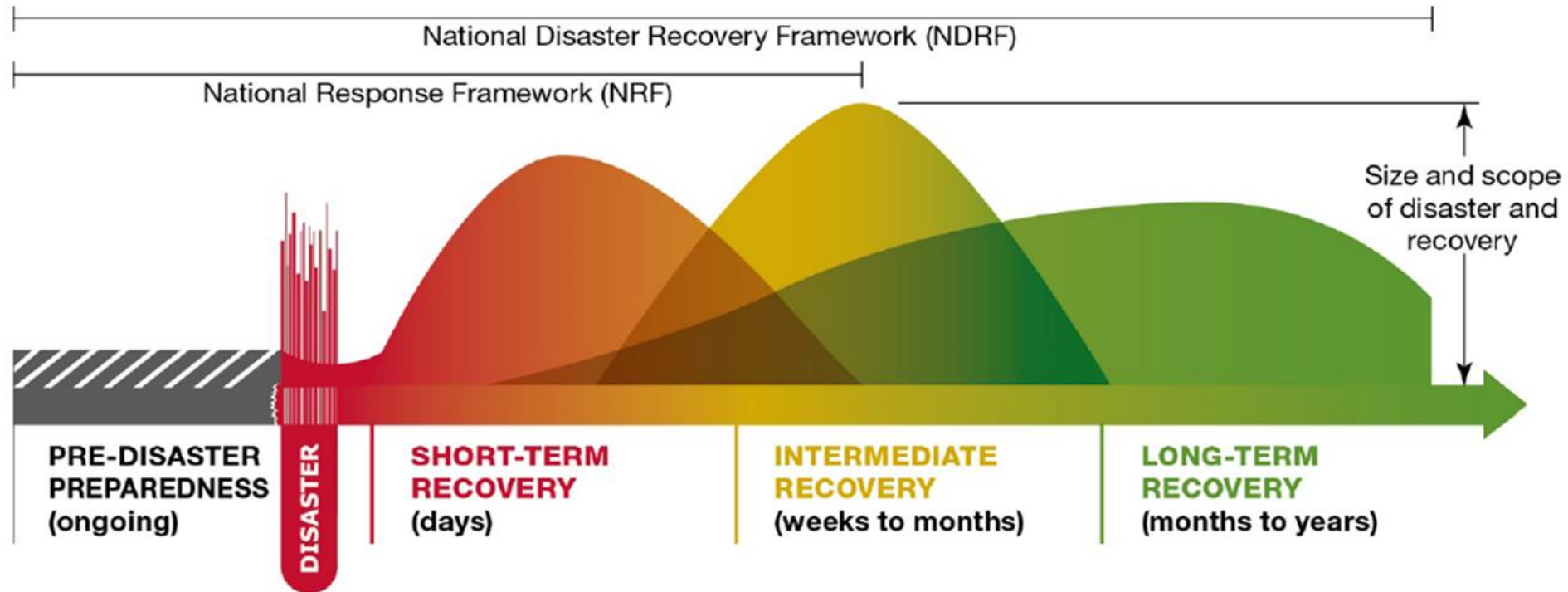
LESSONS LEARNED FROM THE 2017 AND 2018 HURRICANE SEASON

Chris Vaughan
Geospatial Information Officer
Response Geospatial Office



November 2, 2018

Geospatial data and analysis informs decision-making, reduces duplication, and improves cost efficiency



Predictive analytics on requirements

- THIRA/State Preparedness Reports
- Risk Analysis
- Planning and Exercise Development

Affirming or adjusting the operational posture

- Impact Analysis
- Resource Allocation
- Route Analysis

Program speed through visualization and automation

- Automation of workflows
- Alerting and thresholds
- Program execution (e.g. grants)

HAZARD



Flood



Tornado



Hurricane



Earthquake



Man-made

DATA



ANALYSIS

MODELING



Impact Assessment



Scripts

REMOTE SENSING



UAS



Satellites



Planes

CROWD SOURCING



Real-Time Situational Awareness

DISSEMINATION



Dashboards



Reports/
Infographics



Mobile

GOAL

Provide Better Support for the Disaster Survivor

▶ Reduce Complexity

▶ Save Time

▶ Enhance Situational Awareness

STEADY STATE



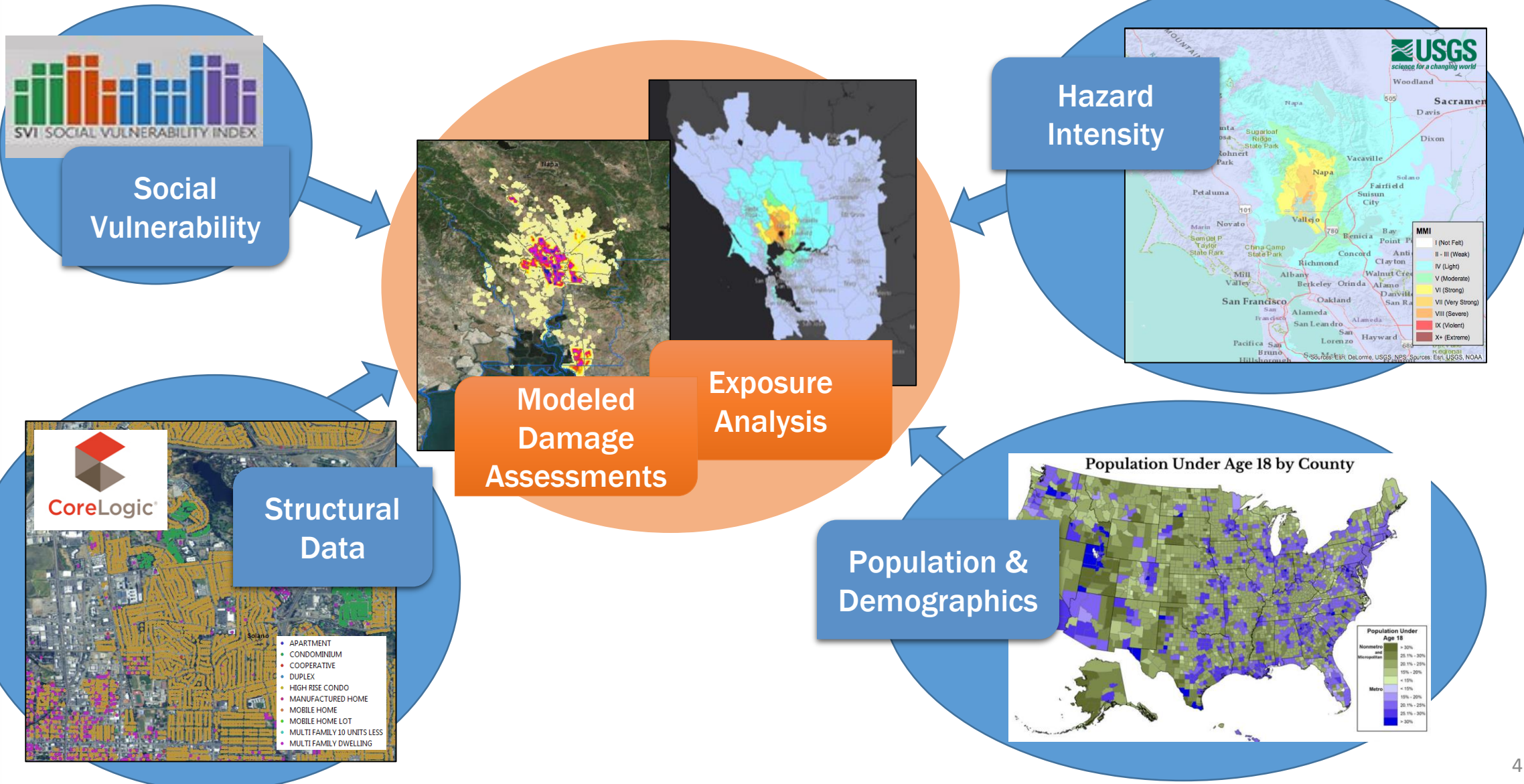
ACTIVATION

- Geo Coord Calls
- Interagency Participation
- Data Sharing

NEED:

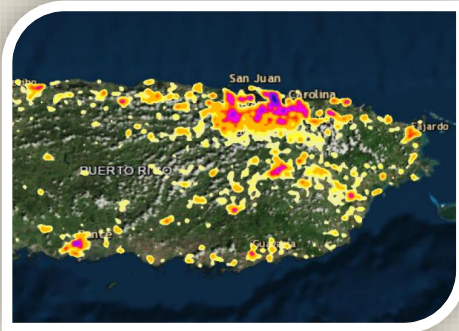
- **PROGRAM REQUIREMENTS**
(US&R, IA, PA)
- **SCHEMA STANDARDIZATION**
- **RISK TOLERANCE**

EARTHQUAKE ANALYSIS



DISASTER ANALYTICS

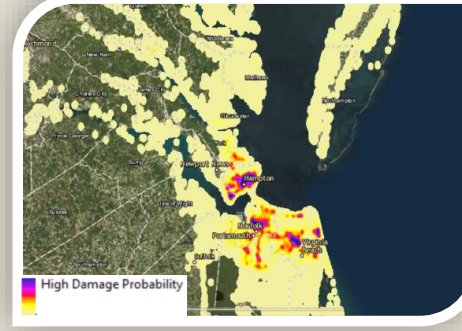
Prioritizing
Search & Rescue Efforts



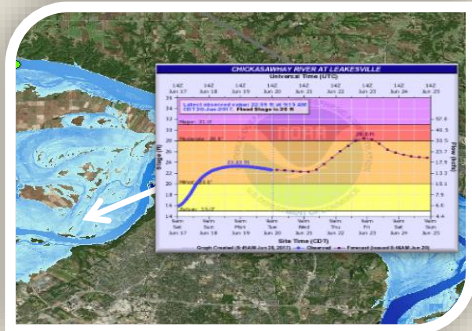
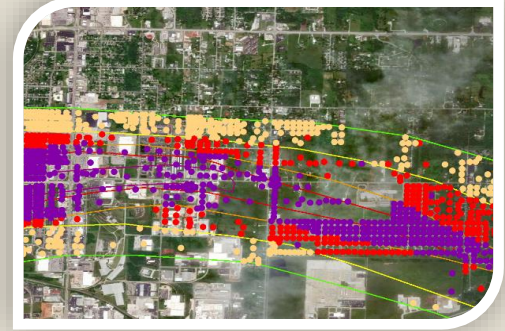
Automating
Debris Detection



Mapping
Hazard Exposure



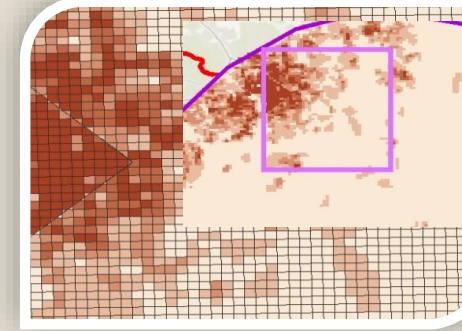
Modeling
Damage Assessments



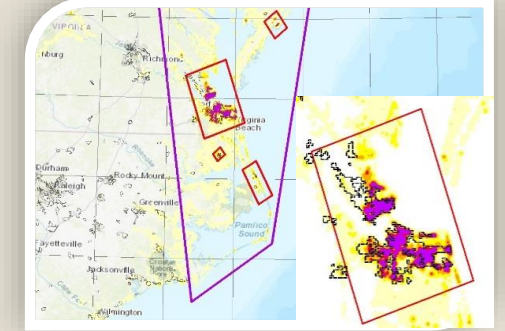
Modeling & Forecasting
Floods



Extracting
Building Footprint

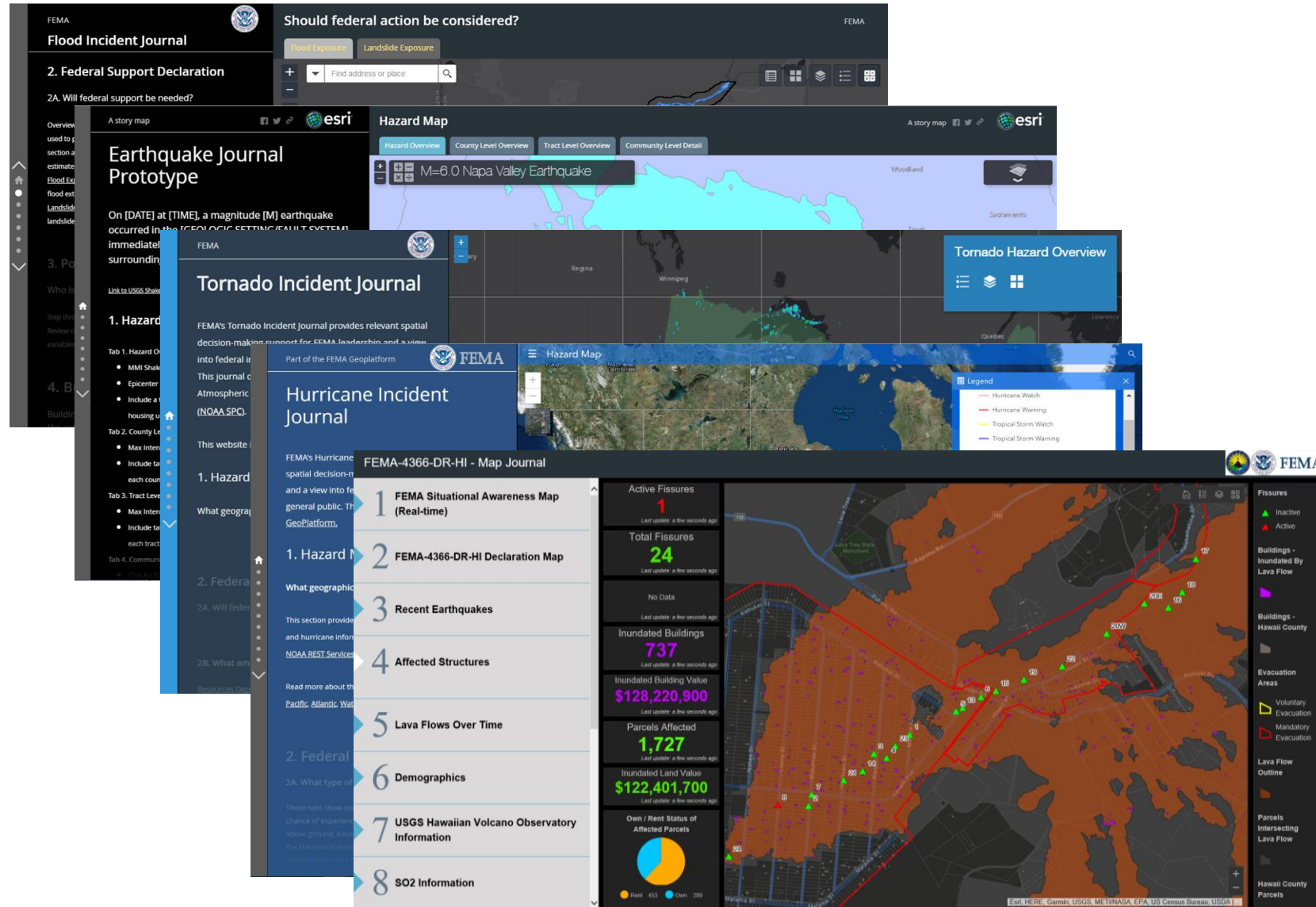


Modeling
Population Vulnerability



Prioritizing
Imagery Collection

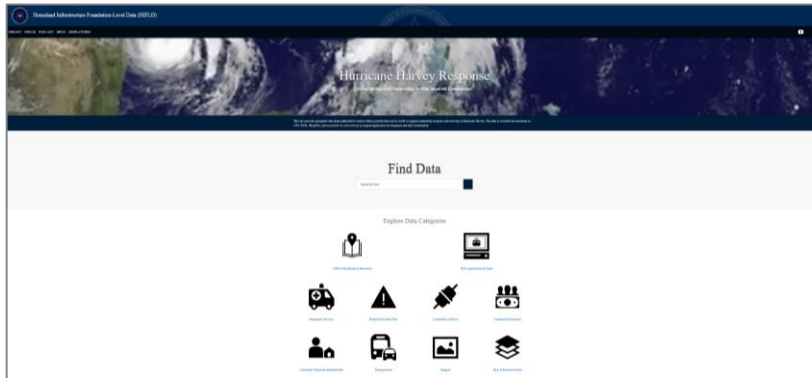
Analysis and Dissemination



2017 HURRICANE SEASON

HIFLD for Harvey, Irma, and Maria

- DHS, NGA, and DOI provided support for an OpenData page on GeoPlatform.gov



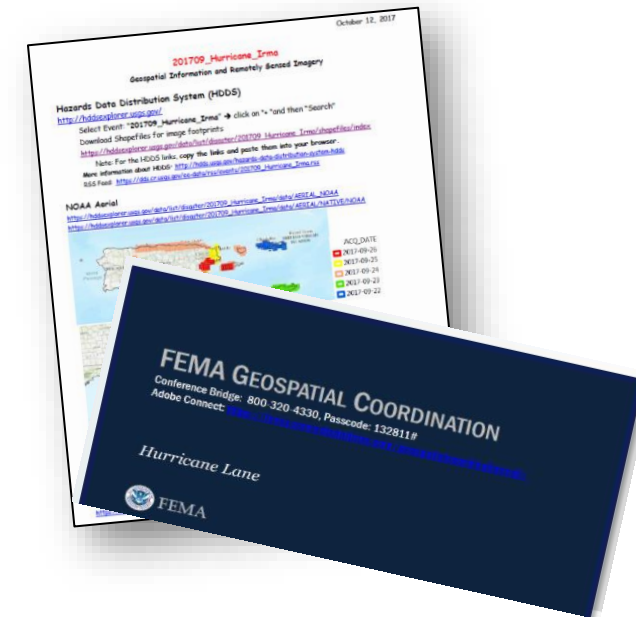
GeoPlatform.gov

- disasters.geoplatform.gov launched 2 weeks prior to Harvey's landfall
- Standard CCB deployed



Community Outreach

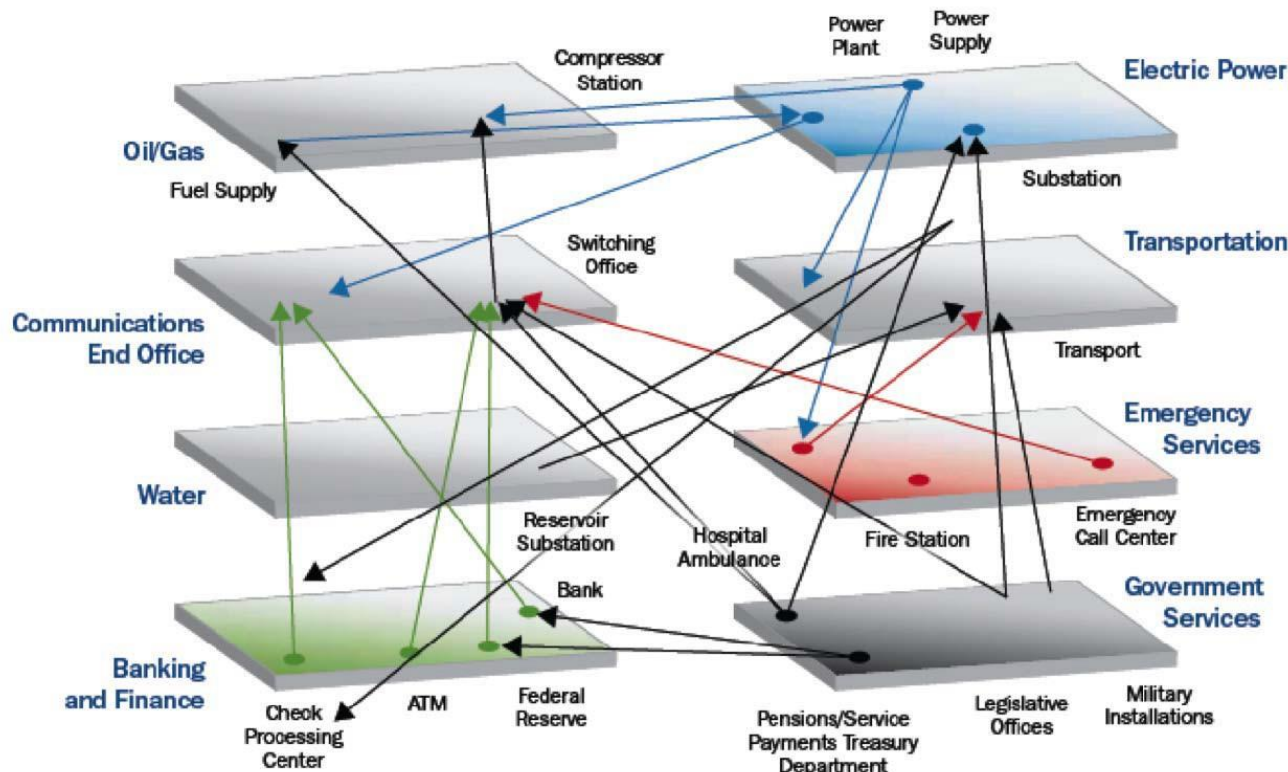
- The "Glen Bethel" report
- Daily coordination calls/pdfs



- Data was made open/discoverable, but still not indexed

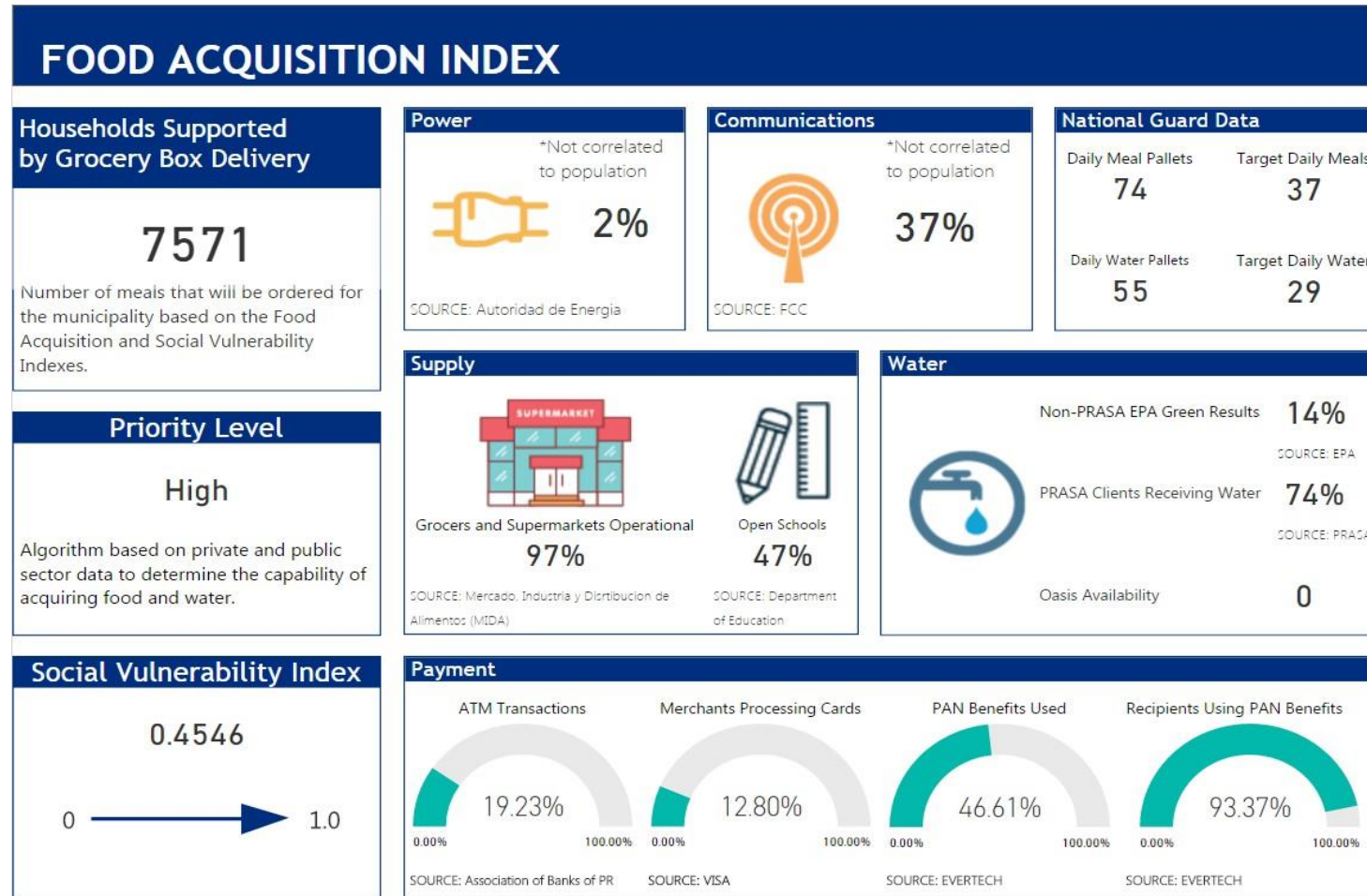
2017 LESSONS : INFRASTRUCTURE INTERDEPENDENCIES

- Adapting to a lack of situational awareness across the 16 sectors
- Accounting for Sector capability shortfalls (e.g., lack of bandwidth)
- Accounting for Sector operational adjustments (e.g., work-arounds)
- Supporting resource prioritization



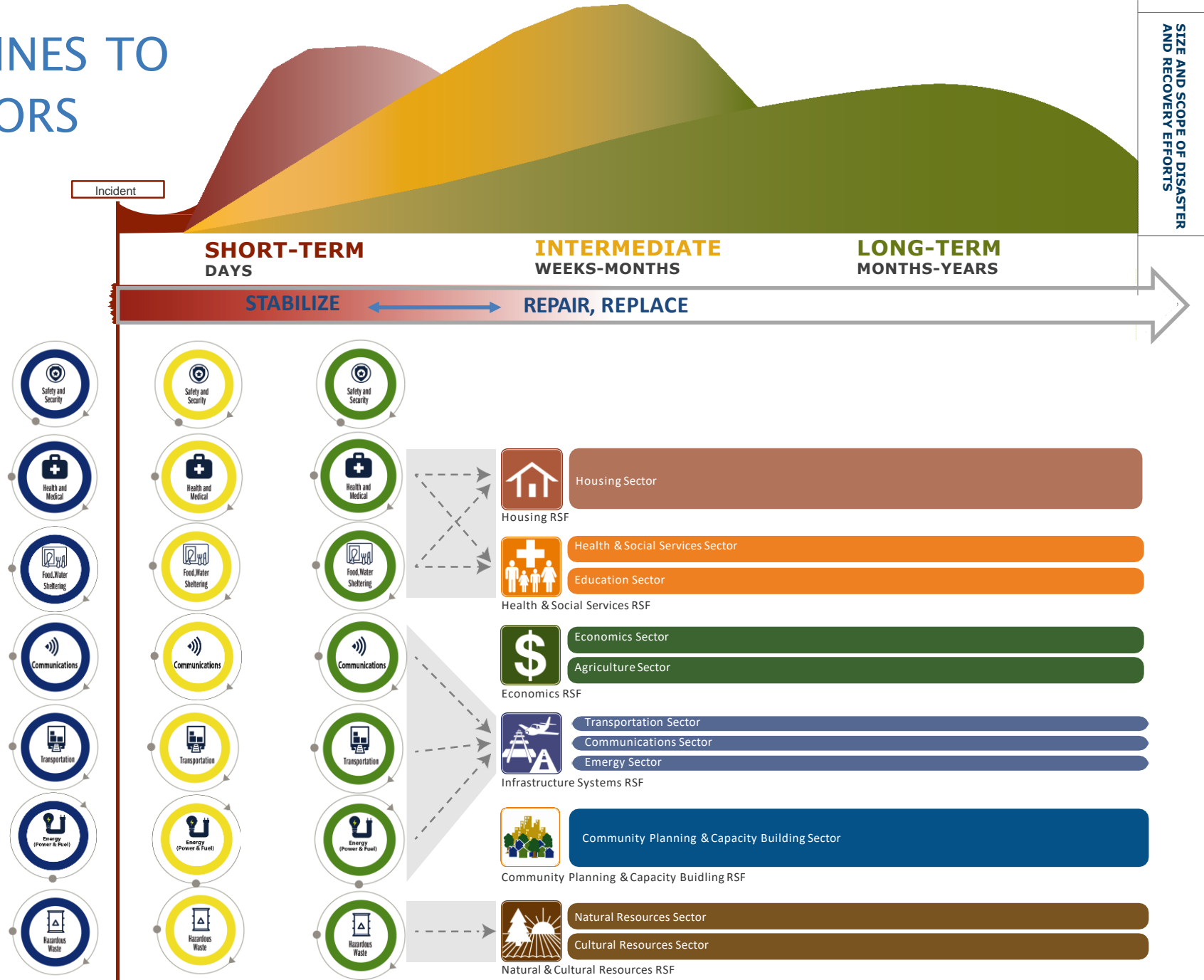
2017 LESSONS : DATA ANALYSIS AND INTEGRATION

Informing the PR Feeding Mission through data from various sources



- Each box contains data from a different source (Federal/Commonwealth/Private sector)
- Significant data cleansing, deconfliction, and validation typically required

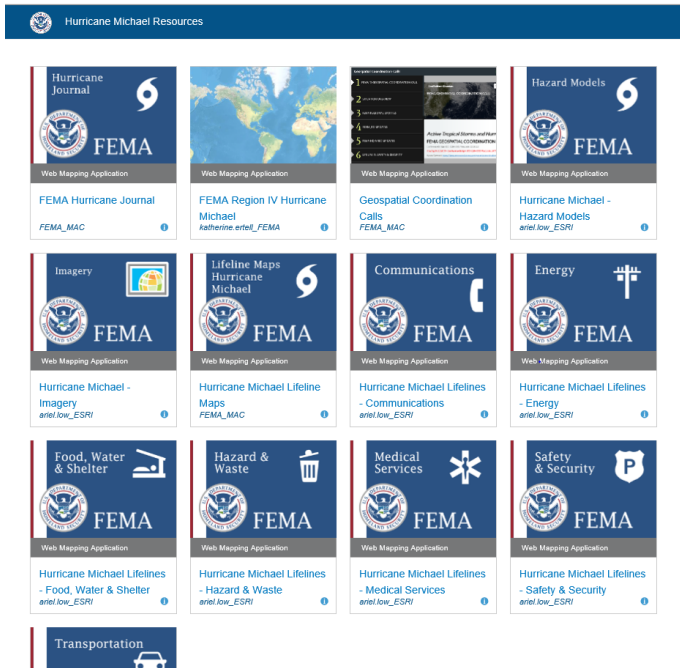
LIFELINES TO SECTORS



2018 HURRICANE SEASON

Lane, Florence, and Michael

- FEMA AGOL “Gallery” page



GeoPlatform.gov

- Customized Community template



Community Outreach

- The “Glen Bethel” report
- Story Maps
- PowerPoints
- Daily Phone Calls
- Blogs



- No overall index/unifying mechanism to “link” disparate information during events

MODELING AND DATA WORKING GROUP (MDWG)

Overview:

- **An interagency working group** appointed by the Emergency Support Function Leaders Group (ESFLG) in 2012

Mission: Information Gathering & Sharing

- Assess the current state of **modeling systems**
- **Identify consistent, reliable, authoritative models and datasets** to enable response planning and operational decision making

Goals:

- Identify state-of-the-art capabilities to incorporate into response operations
- Maintain the **Model and Data Inventory (MoDI)**
- Identify gaps and recommend solutions
- Improve **information sharing, outreach, and communication** with the broader emergency management community

2018 Efforts:

- Monthly meetings focused on incident- and capability-specific requirements
- Follow-on Issue Papers providing a meeting summary and path forward
- MoDI content updates & website enhancements

FOR MORE INFORMATION, CONTACT:

FEMA-MDWG@fema.dhs.gov

2018 Yearly Plan

3rd Wednesday of the Month
January - November



National Security
Special Events (NSSEs)



Remote Sensing



Disaster Analytics



Wildland Fires



MoDI Update



Hurricanes



Critical Infrastructure



Chemical Hazards



Communications

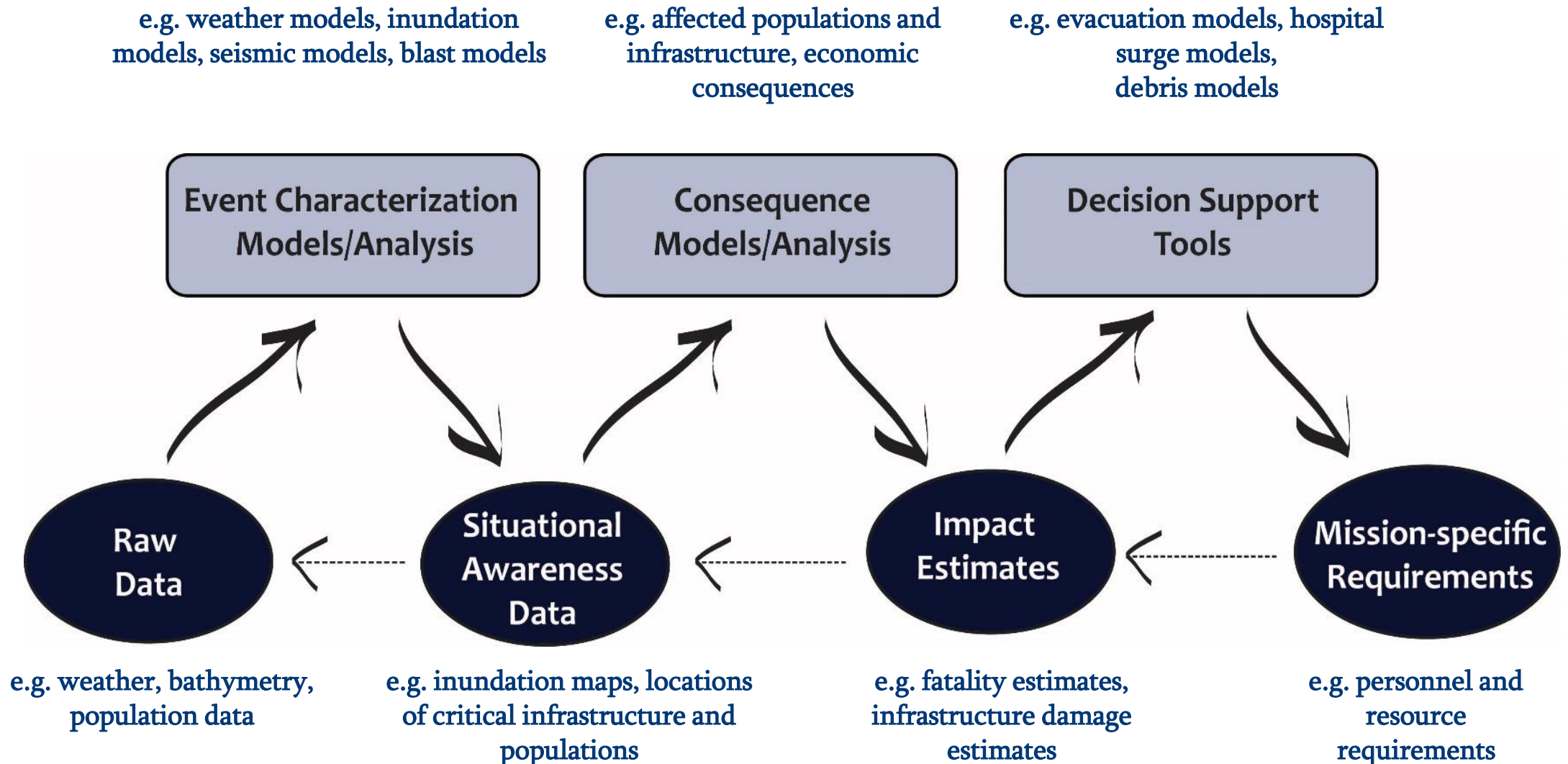


Tsunamis

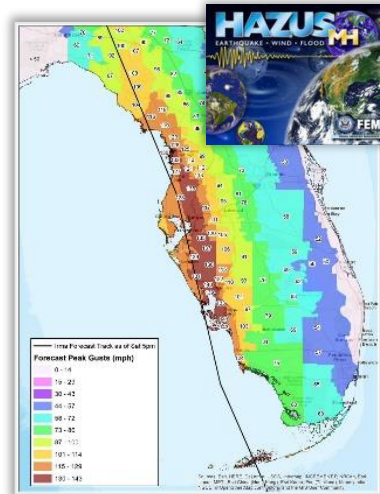
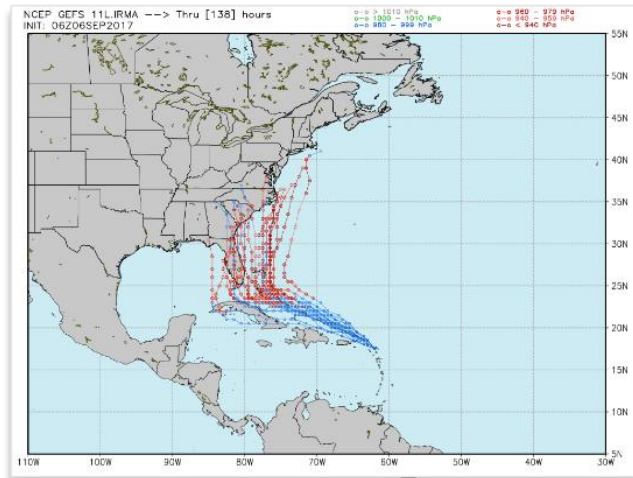


Floods

MDWG: ORGANIZING THE INFORMATION



MDWG FLOW EXAMPLE: FL HURRICANE

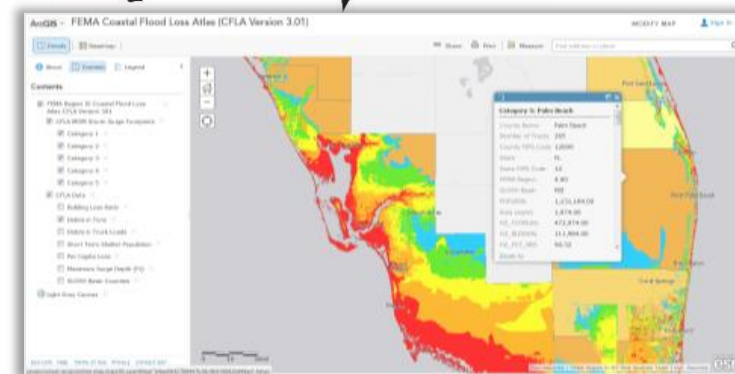
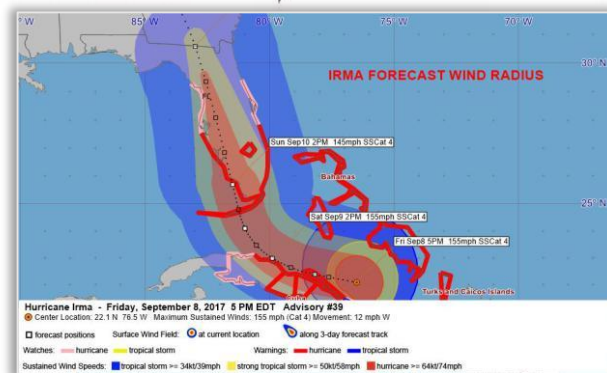
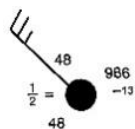
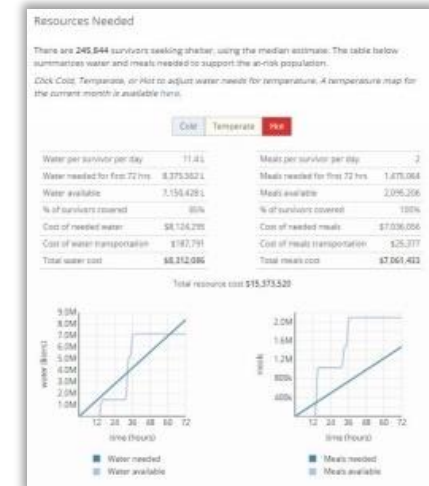


ESFs Chosen: ☐ ESF 10 Public Works and Engineering ☐ ESF 16 Mass Care ☐ ESF 17 Logistics ☐ ESF 112 Emergency

Click on the table below and complete each column as applicable. Information where not provided, default values have been assigned. To remove the selection in each column, users can uncheck the value in the corresponding column and provide a brief description of each ESF in the table.

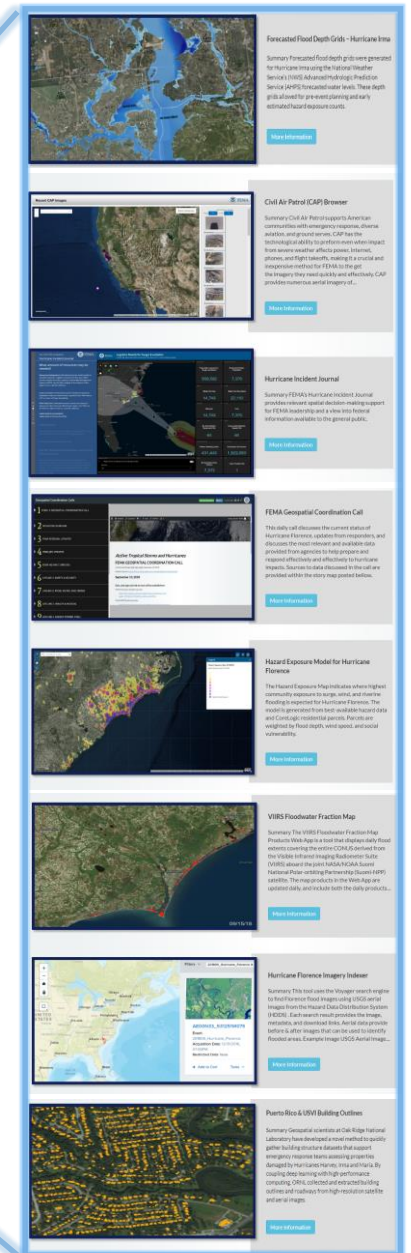
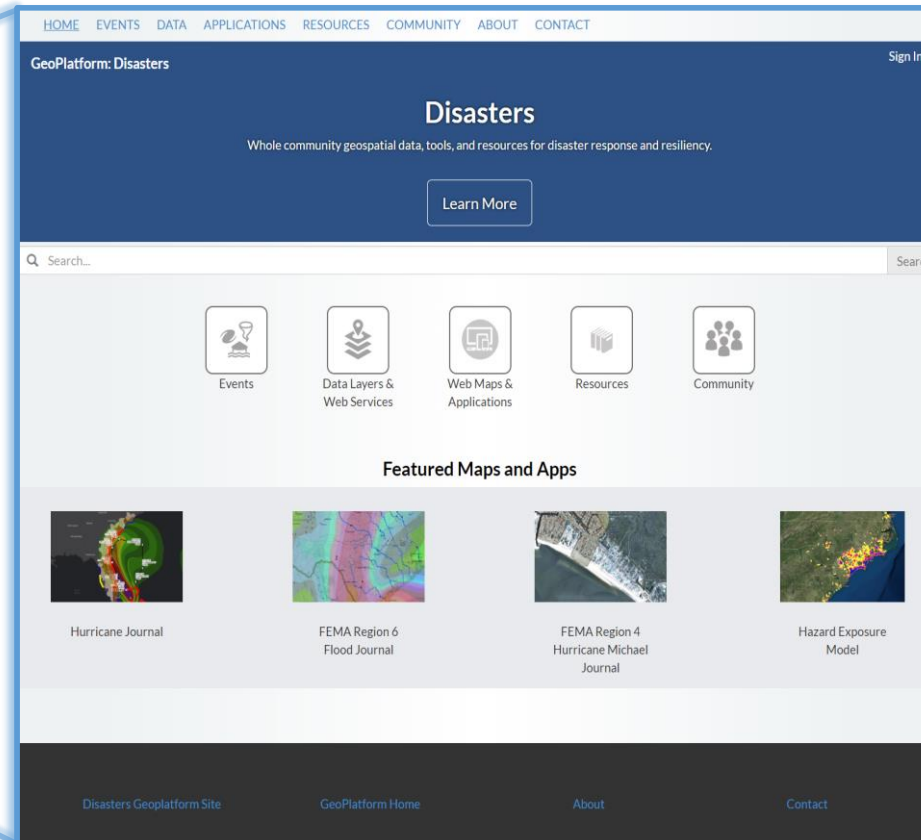
Location of Event	Location of Facility
ESF 10, 16, 17, 112	Default
Commodities Exposed Population	ESF 10, 17
At-Risk Population	ESF 10, 17
Damage Extent	ESF 10, 17
Distribution Center Resources	ESF 10, 17
Commodity Costs	ESF 10, 17
Commodity Needs	ESF 10, 17
Air Transport Type	ESF 10, 17
ESF 10 Data Import	ESF 10, 17
People per Container (Marine)	ESF 10, 17
Critical Infrastructure Data	ESF 10, 17
Infrastructure Without Power	ESF 10, 17

Map of the United States with Florida highlighted in red.



2019 HURRICANE SEASON

Disasters.GeoPlatform.Gov



- **Vision:** Unified environment for community partners to publish, share, and access authoritative geospatial data, applications, and resources related to the preparedness, response, recovery, and mitigation of disasters.

Contact Us

Modeling Data Working Group

FEMA-MDWG@fema.dhs.gov

Remote Sensing

FEMA-Remote-Sensing@fema.dhs.gov

Join the

Remote Sensing and GIS Data for Disaster Community (RSGDC) mailing list

To receive notification on available imagery and products during disasters

https://public.govdelivery.com/accounts/USDHSFEMA/subscriber/new?topic_id=USDHSFEMA_1367