

FEMA GeoPLATFORM

EVOLUTIONS IN OPERATIONAL SUPPORT

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DEPUTY ASSISTANT ADMINISTRATOR FOR RESPONSE



FEMA



November 2, 2018

Unprecedented 2017 Hurricane Season Followed by a busy 2018

2

First time 2 Atlantic Category 4 Hurricanes (Harvey and Irma) made landfall in the continental U.S. in the same year.



Hurricane Harvey grew from a regenerated tropical depression to a Category 4 hurricane in **56 hours**.



Harvey set a new record for the most rainfall from a U.S. tropical cyclone, with more than **50" of rain** and remained a cyclone for nearly 5 days after landfall.



Hurricane Irma became the strongest Atlantic Ocean hurricane on record with winds peaking **over 185mph** and **remained a hurricane for 11 days**.



Hurricane Irma was **500 miles wide**, more than **130 miles wider** than the entire state of Florida.

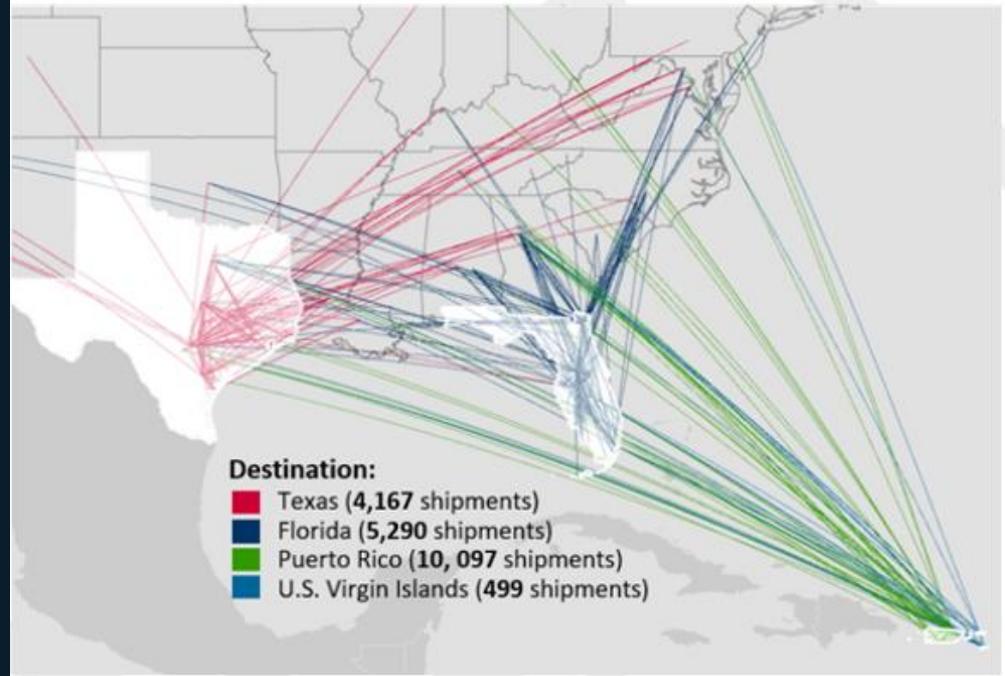


Hurricane Maria was the **First Category 4 hurricane in 85 years** to make landfall on the main island of Puerto Rico.



Over 700 generators installed in Puerto Rico by the USACE.

FEMA-Sourced Commodity Shipments



| Disaster | Number of Inspections |
|----------|-----------------------|
| Katrina | 1,385,329 |
| Rita | 623,635 |
| Wilma | 439,081 |
| Sandy | 343,003 |
| Harvey | 627,930 |
| Irma | 1,073,658 |
| Maria | 810,847 |

Costliest Billion-Dollar Hurricanes On Record

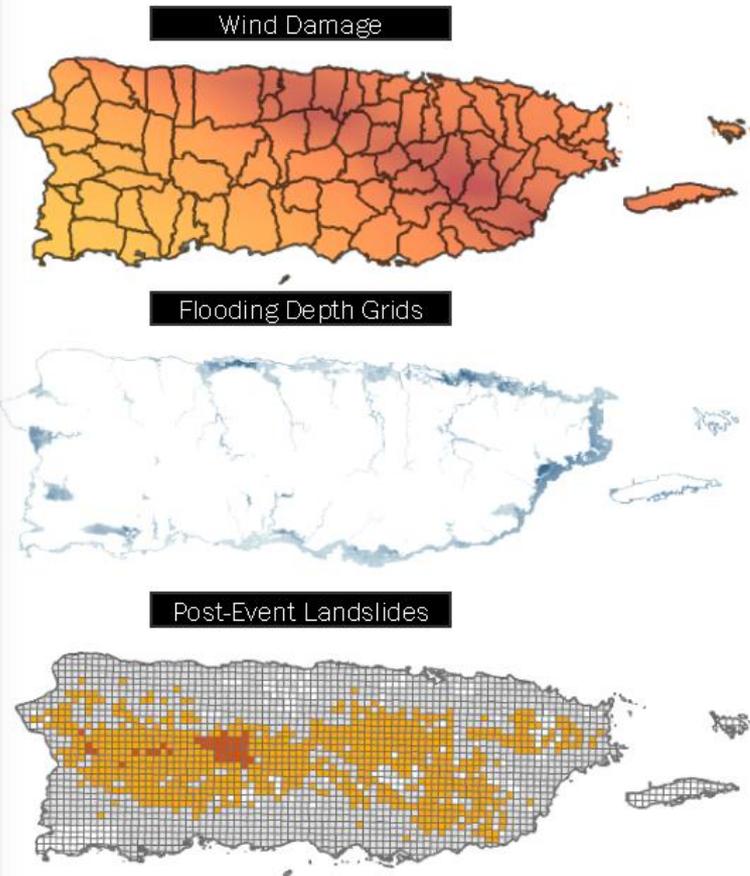


2017 Lessons : DATA ACCESSIBILITY

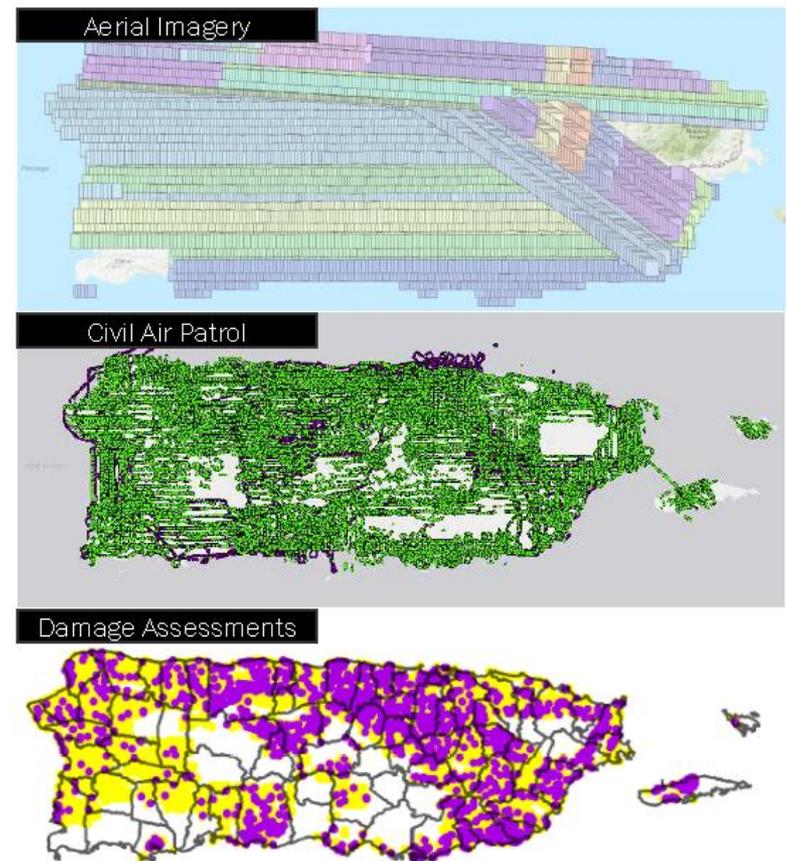
Data Accessibility

- Homeownership Records
- OCONUS population demographics and infrastructure

Hazard-based Modeling and Observations



Remote sensing-derived damaged assessments



2017 Lessons : SURGE MANPOWER

- Surge staffing from DoD, National Guard, other partner organizations
- Crowdsourcing Applications
- Openly sharing data and operational viewers



<< Previous Image Submit Skip - New Image

Mark the Image with Damage Assessments

FEMA: Image Analysis Training

Mark Buildings as Affected

Mark Buildings as Minor

Mark Buildings as Major

Mark Buildings as Destroyed

Remove All Marks on Image

In General, Impact is shown in Image

In General, No Impact in Images

Image Info:

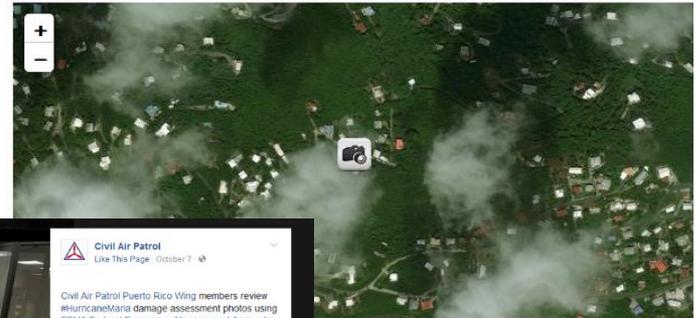
Event: CAP - Hurricane Irma

Team: 17-1-5752

Mission: A0011

Photo Date: 2017-09-10 09:34:31

Altitude: 491(m)



Civil Air Patrol

Like This Page · October 7 ·

Civil Air Patrol Puerto Rico Wing members review #HurricaneMaria damage assessment photos using FEMA Federal Emergency Management Agency's crowdsourcing site: ACPA: your freedom to fly. Air Force Association, United States Air Force, Air Combat Command, Flying Magazine, General Aviation News, Plane & Pilot Magazine

Paul Wescott, Ricardo X. Torres, Herman Liboy and 293 others like this.

72 Shares · 5 Comments

Civil Air Patrol · Here's the crowdsourcing site -- <http://imageruploader.geoplatform.gov/#/DamageReview/>

CAP Image Damage Assessment

MA0CRV/UPLOADER.GEOP/PLATFORM.GOV/

October 7 at 6:55pm · Edited



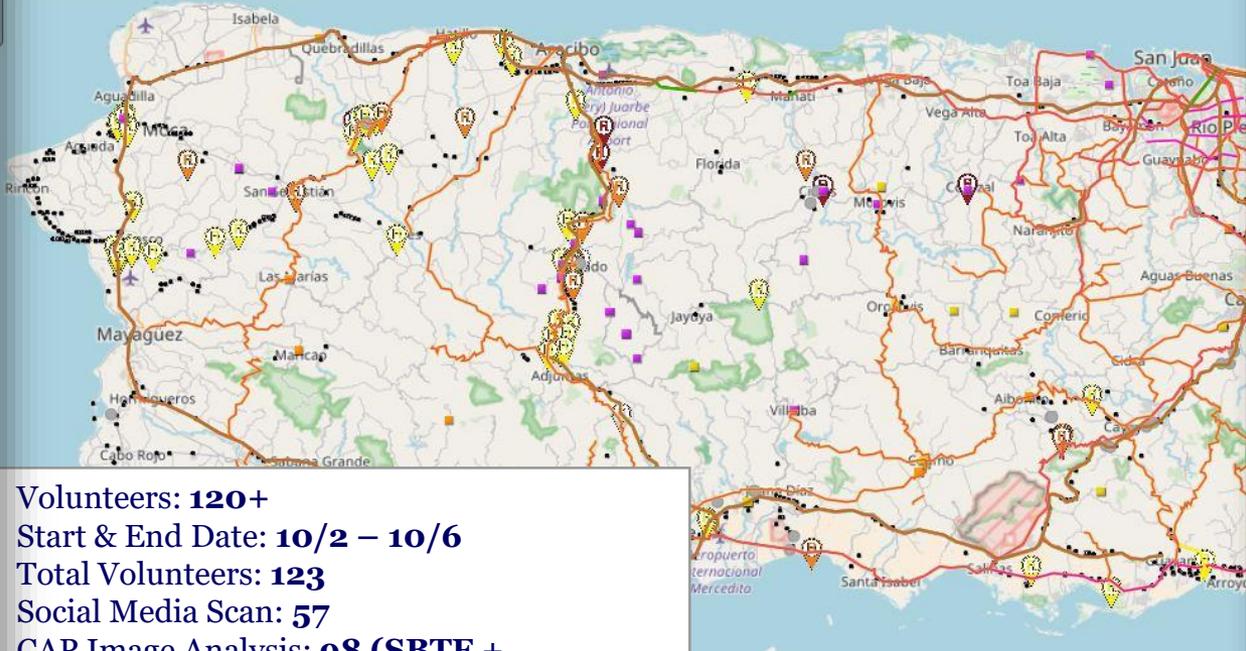
FEMA

Example: Road & Bridge Status with Hospitals Map

PR Road and Hospital Status - SBTF - FEMA Map (1709/1710)

Developed for FEMA by many many volunteers!

Find address or place



Legend

Roads DoD with SBTF Status (10/06/2017)

- ROADS CONTRACTED FOR REPAIRS
- ROADS REPAIR BY PUBLIC WORKS DEPT
- ROADS PARTIALLY OPENED (WORK IN PROGRESS)
- ROADS ALREADY IMPACTED AND OPENED TO TRAFFIC
- ROADS OPEN TO TRAFFIC
- UNDEFINED

1b. SBTF - Social Media Updates by Damage Type (Live Feed)

- Closed
- Partially Open
- Unknown

2a. Road Damage Type based on CAP Imagery (Live Feed)

- Destroyed
- Major
- Minor
- Damage
- others

3. CAP Imagery - SBTF Reviewed (Live Feed)

.

Volunteers: **120+**
Start & End Date: **10/2 – 10/6**
Total Volunteers: **123**
Social Media Scan: **57**
CAP Image Analysis: **98 (SBTF + GISCorps)**
Coordinators: **10**
Slack: # **standbytaskforce**

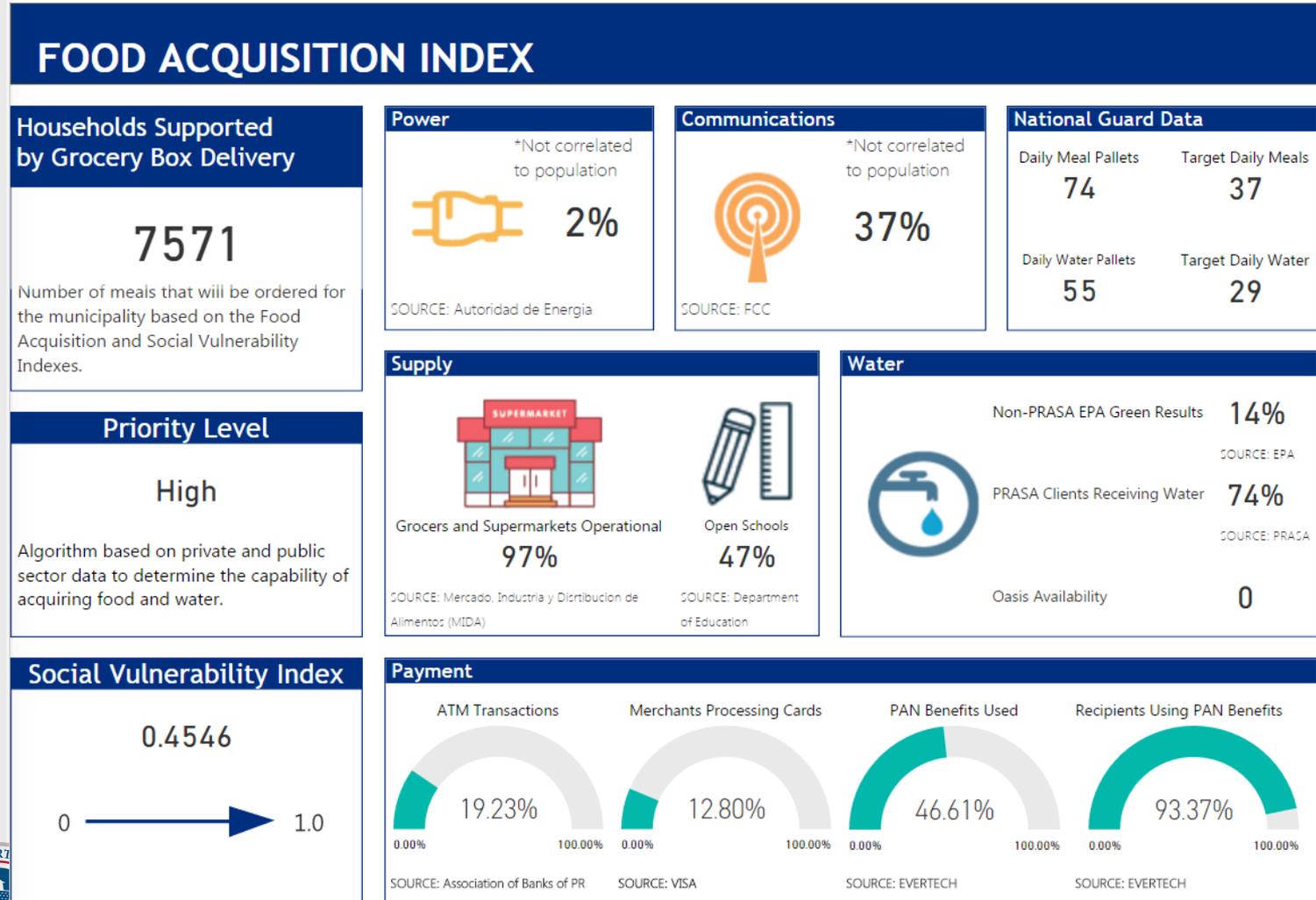
This has been used to compile all the road status data into a single, cross referenced map. Hospital, Road and CAP data are also included in this map and updated daily based on files supplied by FEMA, DoD and CAP respectively.



<http://bit.ly/SBTF-roads>

2017 Lessons : Data Analysis and Integration

Informing the PR Feeding Mission through data from various sources

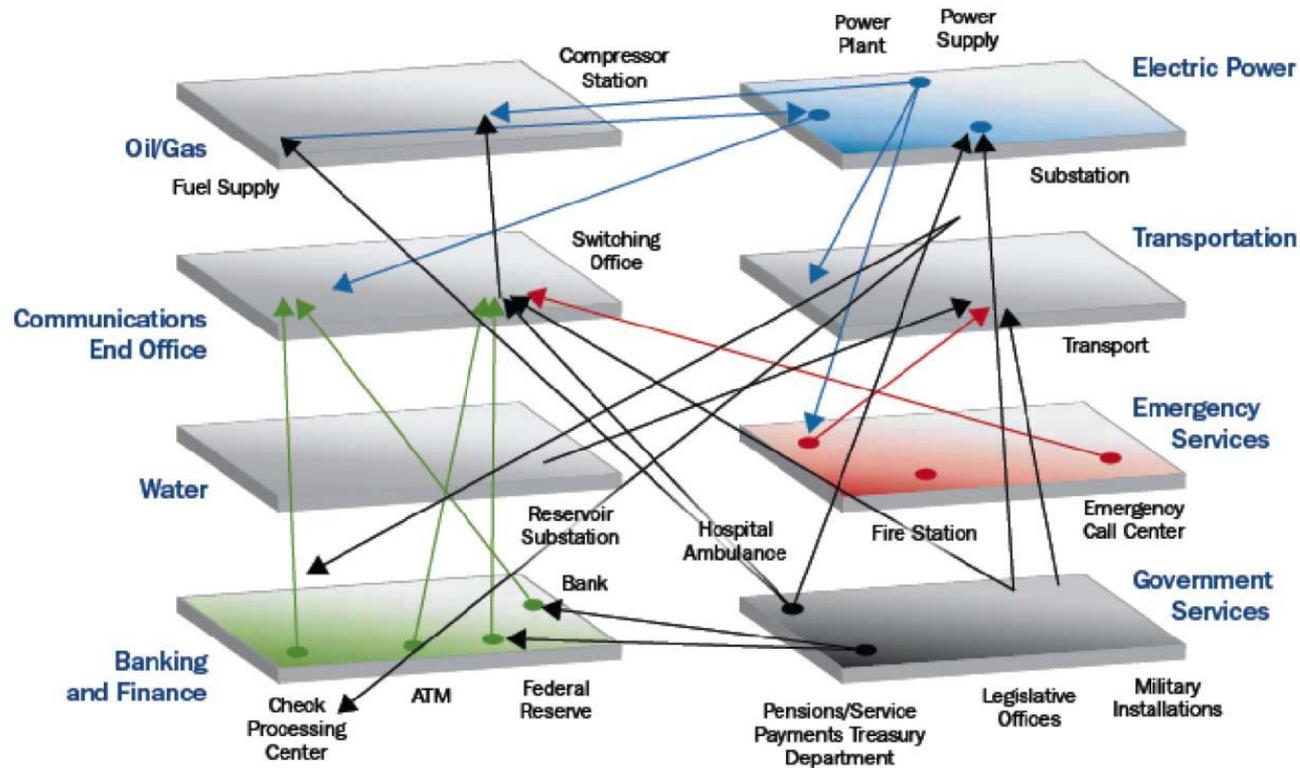


- Each box contains data from a different source (Federal/Commonwealth/Private sector)
- Significant data cleansing, deconfliction, and validation typically required

2017 Lessons :

INFRASTRUCTURE INTERDEPENDENCIES

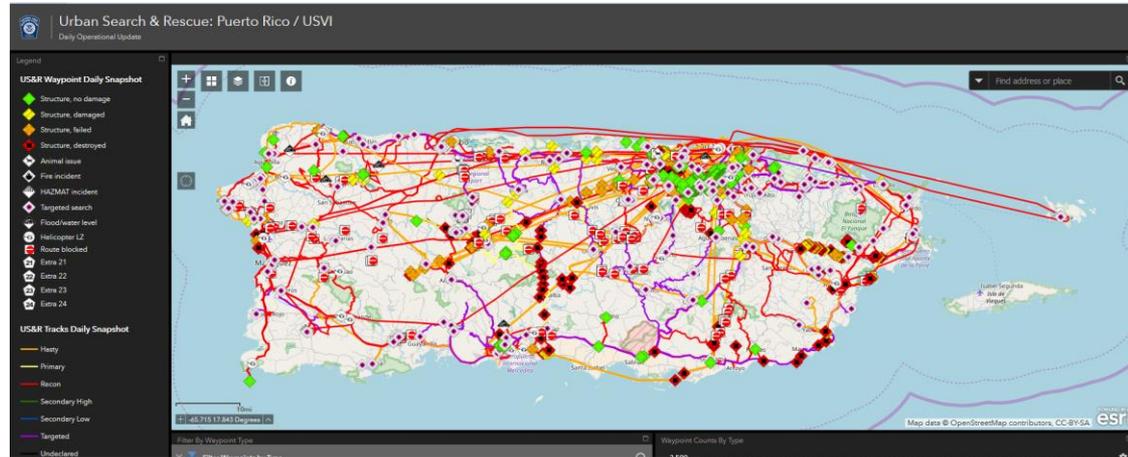
- Adapting to a lack of situational awareness across the 16 sectors
- Accounting for Sector capability shortfalls (e.g., lack of bandwidth)
- Accounting for Sector operational adjustments (e.g., work-arounds)
- Supporting resource prioritization



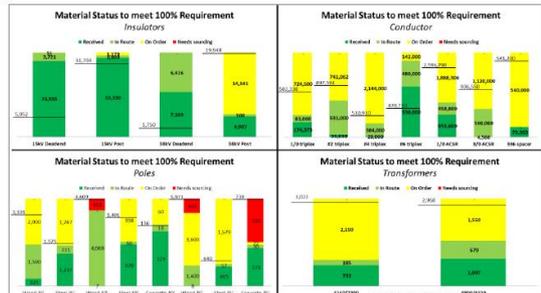
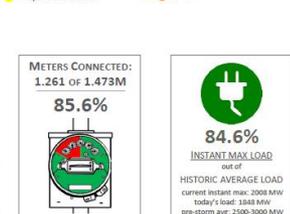
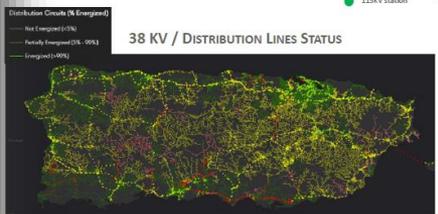
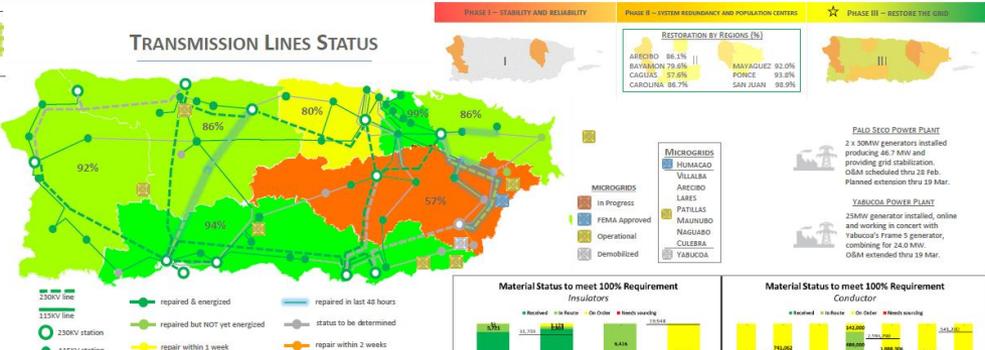
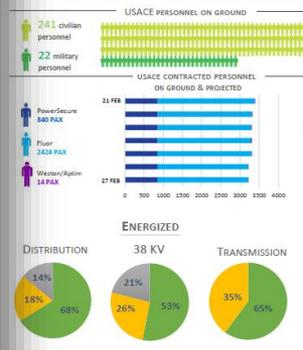
2017 Lessons : OPERATIONS SUPPORT

GIS is increasingly integrated in how we do business

Urban Search & Rescue, Disaster Survivor Assistance Teams, and Environmental Historic Preservation use mobile apps to track team movements and receive information in real time



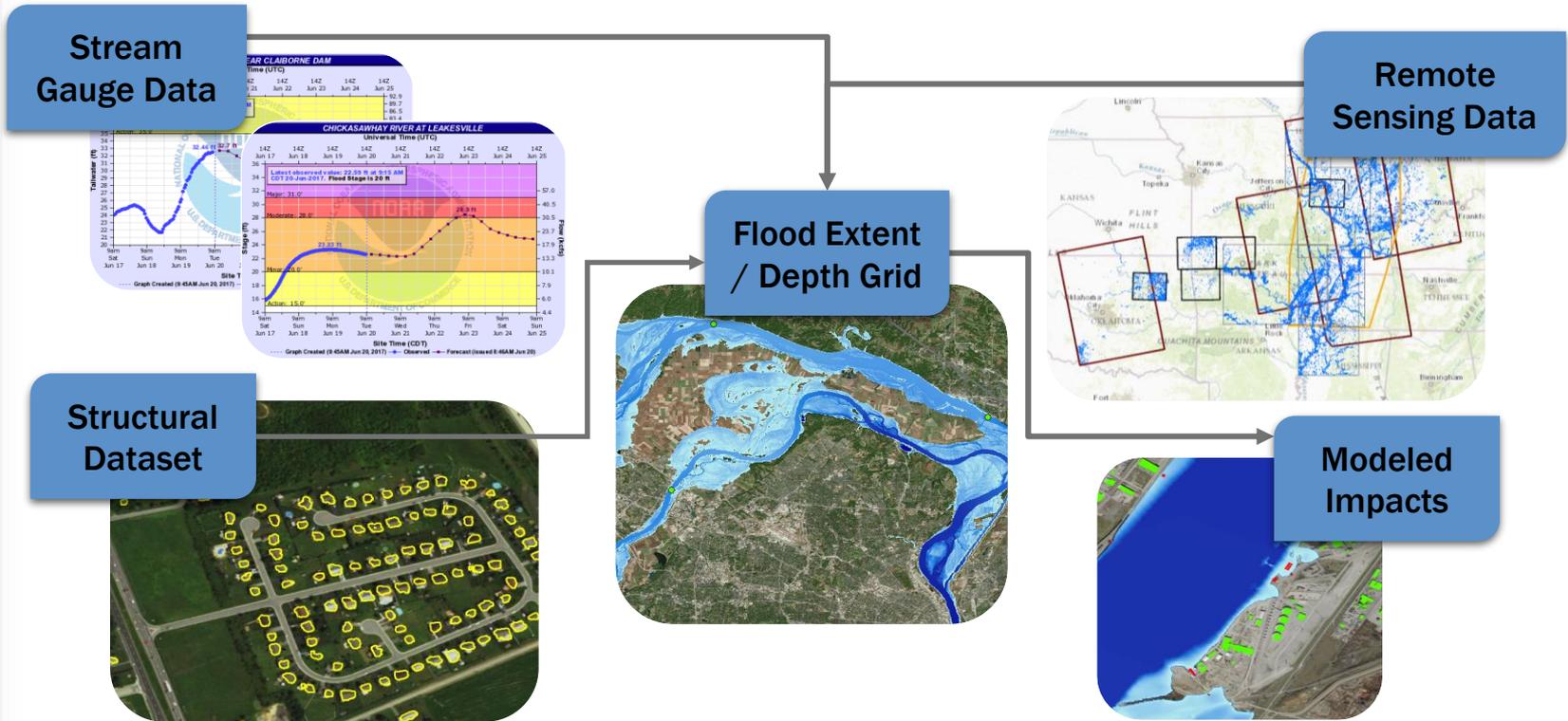
PUERTO RICO POWER GRID RESTORATION



GIS-display of situational awareness and program effectiveness to senior leadership

2017 Lessons : DAMAGE ASSESSMENTS

Modeling and imagery helps to determine level of damage



FEMA



Damage Assessments: Dashboards

Total Exposed

Modeled Damage

156,099

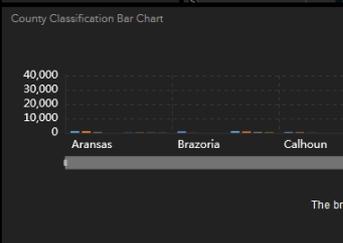
The total number of modeled damage assessments classified as affected, minor, major, or destroyed.

Classification Pie Chart

Damage Classification

Affected
Destroyed
Major
Minor

The breakdown of modeled damage



Part of the FEMA Geo... **FEMA**

Hurricane Incident Journal

Modeled Damage Assessments

Hurricane Michael visual imagery geospatial damage assessments are updated daily to provide rapid situational awareness of the number of structures impacted by Hurricane Michael.

The two structure damage classifications currently being used to assess damages are "destroyed" and "affected".

[Hurricane Michael Modeled Damage Assessments App](#)

Individual Assistance Registrations

Hurricane Michael Modeled Damage Assessments

FEMA

Modeled Damage Assessments

Modeled Damage Assessments

Destroyed
Affected

Modeled damage assessments broken into categories: Affected & Destroyed

| TOTAL | Affected | Destroyed |
|---------------|----------|-----------|
| 25,848 | | |

This is the total count of structures that have been assessed via imagery

Imagery List

Modeled Damage Assessments

20mi

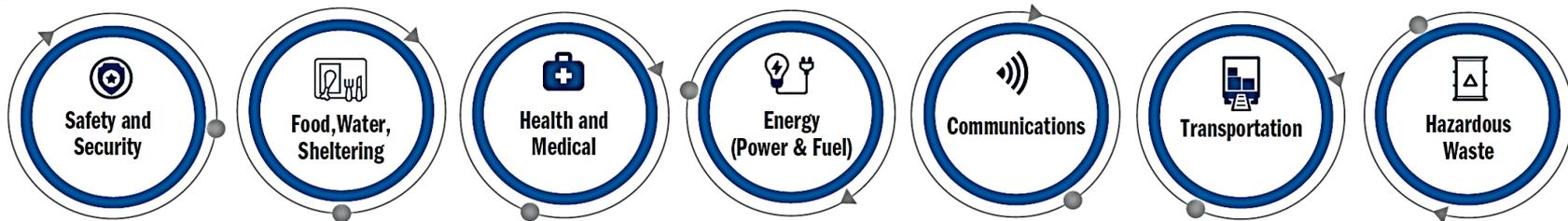
POWERED BY esri

FDEP, Esri, HERE, Garmin, FAO, METI/N...

Focusing Our Attention

Community Lifelines

A CONSTRUCT FOR OUTCOME-BASED STABILIZATION EFFORTS



A lifeline is a sector that provides **indispensable service** that enables the continuous operation of critical business and government functions, and is **critical to human health and safety** or economic security.

Linking Imagery to Objectives



Senior Leadership Brief – Tropical Storm Michael October 11, 2018 (6:00 p.m. EDT)

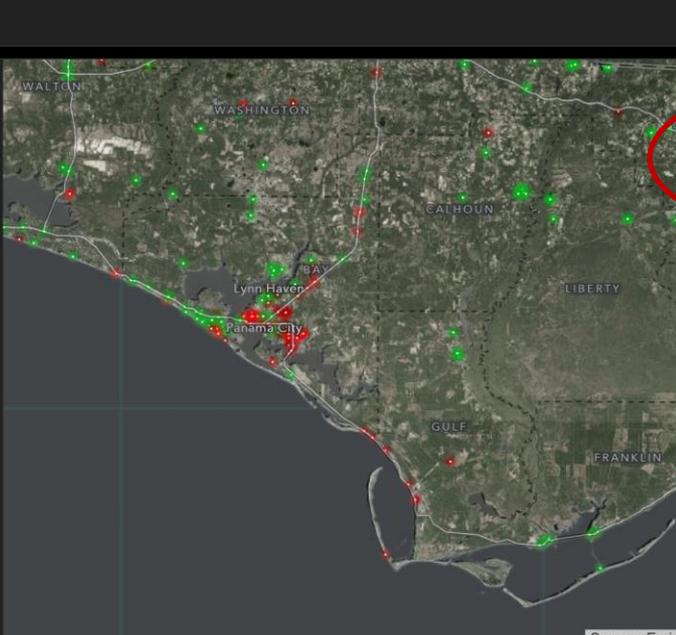
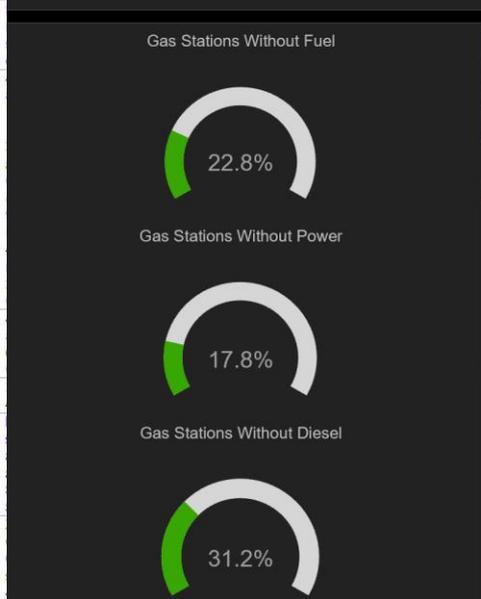
| | | | | | | | | | | | | | | | | | | | | |
|-----------|----|--|--|--|--|--|--|--|--|--|--|----|--|--|--|--|--|--|--|--|
| Region IV | FL | | | | | | | | | | | GA | | | | | | | | |
| | AL | | | | | | | | | | | NC | | | | | | | | |
| | | | | | | | | | | | | SC | | | | | | | | |

Current Situation

Substantial structural damage is seen along the Florida coast across Panama City and Mexico Beach areas. Assessments and local search and rescue operations are concentrating in between the areas of Panama City, Blountstown, Tallahassee, Apalachicola, and Carabelle.

As of 5:00 p.m. EDT, Tropical Storm Michael was located 20 miles north of Raleigh, NC and is moving rapidly northeast at 24 mph. A turn toward the east-northeast with a faster forward speed is expected Friday and Saturday. Maximum sustained winds remain near 50 mph with higher gusts. Michael will continue to produce tropical storm force winds across the Carolinas into portions of Virginia and the Maryland eastern shore. Strong winds will lead to downed trees, power lines, and power outages. Very heavy rainfall will lead to flash flooding of low lying and urban areas. Rivers in central VA and NC are expected to reach moderate to locally major flood levels with inundation of homes and businesses possible. A Tornado Watch remains in effect for much of the region through 9:00 p.m. EDT. The President approved the following Major Declarations: FEMA-4399-DR-FL for Individual Assistance for 5 counties; Public Assistance (Debris Removal and Emergency Protective Measures) for 14 counties; and Hazard Mitigation (All counties).

Energy Lifeline - Dashboard



| | |
|--|---|
| <p>REGION IV RESPONSE FEMA Region IV: Region IV RRCC at Level I (24/7) with all ESFs, Defense Coordinating Officer/Defense Coordinating Element and DHS NPPD. LNOs deployed to FL and GA. I-MAT-2 deployed to FL EOC</p> | <p>STATE/LOCAL RESPONSE AL EOC Level I (Full Activation); Governor declared State of Emergency statewide (all 67 counties). FL EOC Level I (Full Activation); Governor declared a State of Emergency for 35 counties. GA EOC Level I (Full Activation); Governor declared a State of Emergency for 108 (+41) counties. SC EOC at Normal Operations. NC EOC Level III (Partial Activation)</p> |
|--|---|

Key Updates

FEMA Region IV: Region IV RRCC at Level I (24/7) with all ESFs, Defense Coordinating Officer/Defense Coordinating Element and DHS NPPD. LNOs deployed to FL and GA. I-MAT-2 deployed to FL EOC

FEMA HQ: NRCC at Level I (24/7); with all LNOs and ESFs. National IMAT East deployed to FL EOC and Region II IMAT deployed to AL EOC. ISB Team deployed to FSA in Montgomery, AL. Staging areas: Montgomery, AL (Maxwell AFB); Fayetteville, NC (Ft Bragg); North AF AUX, SC

State/Local Response: AL EOC Level I (Full Activation); Governor declared State of Emergency statewide (all 67 counties). FL EOC Level I (Full Activation); Governor declared a State of Emergency for 35 counties. GA EOC Level I (Full Activation); Governor declared a State of Emergency for 108 (+41) counties. SC EOC at Normal Operations. NC EOC Level III (Partial Activation)

Lifelines: Impacts and Actions

| | | |
|-----------------|----|---|
| Energy | GA | <ul style="list-style-type: none"> • Hundreds of thousands of customers remain without power across FL, AL, and GA, and a small percentage of gas stations are out of service in all three states. Some shutdown of oil and natural gas production in impacted areas will have little to no impact on fuel production expected regionally or nationally. Power Planning and Response Team (PRT), utility crews, and other personnel, along with fuel and generators, are staged or deploying to impacted areas to support power restoration efforts. • U.S. Department of Energy (DOE) reports 309,691 (3.2%) customer outages • 5.7% of gas stations reported out-of-service due to lack of fuel, power, or both • 42.3% of oil production and 31.7% of natural gas production shutdown in impacted areas |
| | FL | <ul style="list-style-type: none"> • DOE reports 60,905 (2.4%) customer outages • 1.2% of gas stations reported out-of-service due to lack of fuel, power, or both |
| | AL | <ul style="list-style-type: none"> • DOE reports 336,364 (7.1%) customer outages • 2.3% of gas stations reported out-of-service due to lack of fuel, power or both |
| Communications | GA | <ul style="list-style-type: none"> • Preliminary reports indicate very limited impact to wireline network in FL and GA with AL wireline fully operational. Minimal impact to broadcast (TV and radio) capability. 2 Public Safety Answering Points (PSAPs) are down. |
| | FL | <ul style="list-style-type: none"> • Cellular networks in impacted areas are 69.18% available; 7 counties with more than 50% networks out of service with significantly degraded cellular service or out of service |
| | GA | <ul style="list-style-type: none"> • Cellular networks in impacted areas are 85.83% available; 7 counties with more than 50% networks out of service with significantly degraded cellular service or out of service |
| Transportation | AL | <ul style="list-style-type: none"> • Cellular networks in impacted areas are 90.78% available |
| | GA | <ul style="list-style-type: none"> • Several airports and seaports remain closed or open with restrictions following Hurricane Michael's impacts, although some airports have re-opened. Railroad assessment and response crews have begun to restore train operations in impacted areas as conditions allow. Multiple road closures throughout the impacted areas will affect restoration efforts related to other lifelines. • Destin Ft. Walton Beach Airport open • Tyndall Air Force Base (PAM) closed, will re-open October 15, 11:00 a.m. • Apalachicola Regional - Cleve Randolph Field closed except for military and hurricane relief aircraft • Northwest Florida Beaches International Airport open with limitations • All other airports in affected area are open with normal operations • Federal Aviation Administration issued two Temporary Flight Restrictions (TFRs) issued for airspace from Lake City, FL to Live Oak, FL • Port of Pensacola open, Cedar Key and Panama City remain closed • All ports at Tarpon Springs and any ports north of this area remain closed • Dothan Regional Airport (DHN) open • Gulf Intracoastal Waterway open with restrictions (closed from mile marker 166 east) |
| | FL | <ul style="list-style-type: none"> • Chattahoochee River open with restrictions (closed north of Walter F. George Lock and Dam) |
| Hazardous Waste | GA | <ul style="list-style-type: none"> • All airports open • Port of Savannah and Port of Brunswick open with restrictions |
| | AL | <ul style="list-style-type: none"> • EPA has identified priority oil and chemical facilities and sites that may require assessment, and is coordinating with FL, GA, and NC on wastewater and drinking water. Bay County under boil water notice. |

| | | |
|-------------------------|-----|---|
| Safety and Security | All | • |
| | FL | • |
| | AL | • |
| | GA | • |
| Food, Water, Sheltering | All | • |
| | FL | • |
| | AL | • |
| | GA | • |
| Health and Medical | All | • |
| | FL | • |
| | AL | • |
| | GA | • |

- teams mobilizing
- 19 shelters open, population 447; 3 livestock shelters open
- 6 shelters open, population 317
- 1 Rapid Response Force team to support DSA missions will arrive October 12; 80 additional DSA personnel en route for staging
- 17 total shelters open with 105 occupants (16 Hurricane Michael shelters with 75 occupants; 1 Hurricane Florence shelter with 30 occupants)
- 15 total shelters open with 507 occupants (5 Hurricane Michael shelters with 0 occupants; 10 Hurricane Florence shelter with 507 occupants)
- Several medical facilities in the impacted areas remain closed or evacuated, including hospitals, nursing facilities dialysis centers, and assisted living facilities. Disaster Medical Assistance Teams (DMATs), ambulances, and other emergency health and medical assets are staged or deploying to provide response and recovery support.
- 6 DMATs staged across Jacksonville, Panama City, and Baton Rouge, LA
- Staging 308 ground ambulances and 125 para-transit to support patient movement
- 4 hospitals, 41 dialysis centers, and 11 nursing facilities closed; 11 assisted living facilities and 5 adult care homes evacuated
- 1 Incident Management Team, 1 DMAT, 1 Disaster Mortuary Operational Response (DMORT) Assessment Team staged in Mobile; 1 additional DMAT en-route
- 60 ground ambulances staged

Planning and Exercises

Geo-enabling Operational Plans informs course of action analysis and supports immediate socialization and transition to operations when needed

The screenshot displays a web application interface for the FEMA Region 1 Hurricane Response Decision Guide. The interface is divided into several sections:

- Top Left:** "FEMA Region 1 Operational Planni..." with social media icons and a home button.
- Top Center:** A map showing the hurricane's path from Florida to New England, with timestamps such as "1938-Sep-23 00:00" and "1938-Sep-21 19:00".
- Top Right:** A legend for "Hurricane of 1938" showing wind speed ranges: "157 - 200" (purple) and "130 - 156" (red).
- Left Panel:**
 - Hurricane of 1938 Scenario**
 - Scenario Journal**: "This journal presents the FEMA GeoFramework web map collection for hurricanes and hurricane-like events. This journal is presenting the information and analysis of the 1938 scenario for the 2016 revision of the FEMA Region 1 Hurricane Response Annex."
 - 1. Hazard Overview**: "Hazard Overview. This broad overview details the scenario hurricane's historic path. The fast moving Unnamed Storm of 1938 traveled from Florida to New England in just 18 hours. From landfall in Connecticut as a Category 3 storm, to departure from Vermont as a Tropical storm was a short 3 hours."
- Right Panel:**
 - Region I Hurricane Response Decision Guide** (FEMA Region I Operational Planning)
 - Decision Guide Briefing Scenario**
 - Hurricane Response Decision Guide**
 - Decision Point 1 - Alert**
 - Decision Point 2 - Activate**
 - Decision Point 3 - Deploy**
 - Conditions:** Hurricane/TS North of St. Augustine (30° N, 70° W) OR 48 hours to forecasted impacts
 - Key Federal Decisions:** Accelerate or delay response actions, Confirm Level of Response (low, medium, high), Activate RRCC to Level 1



FEMA