

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.

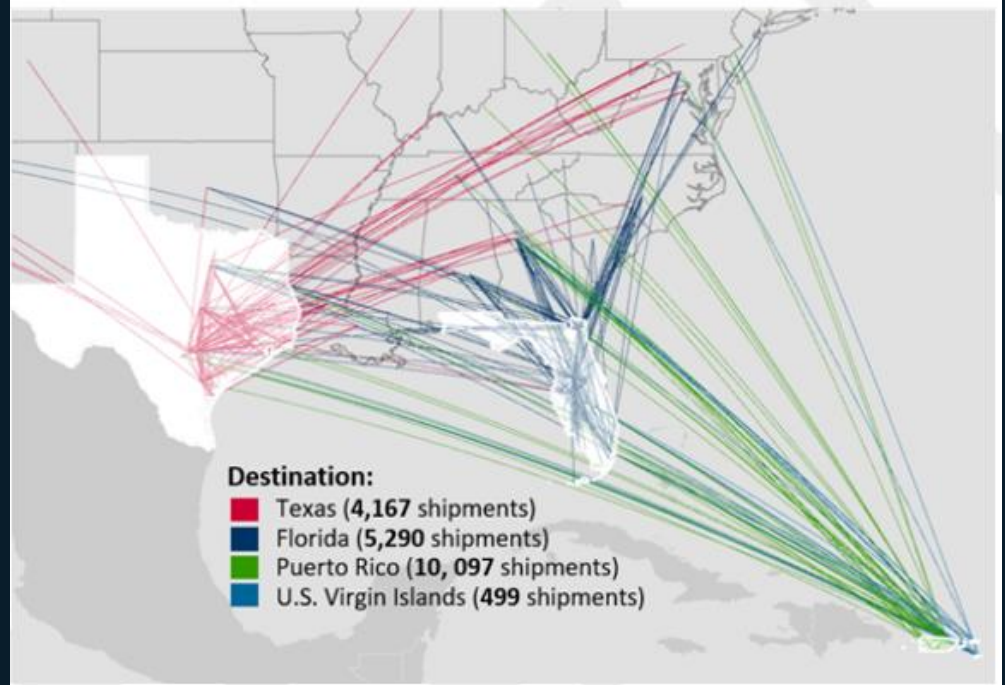


Hurricane Maria was the **First Category 4 hurricane in 85 years** to make landfall on the main island of Puerto Rico.



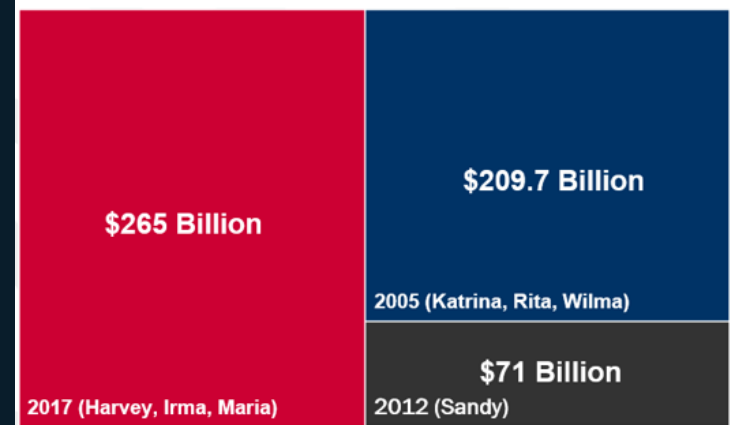
Over 700 generators installed in Puerto Rico by the USACE.

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

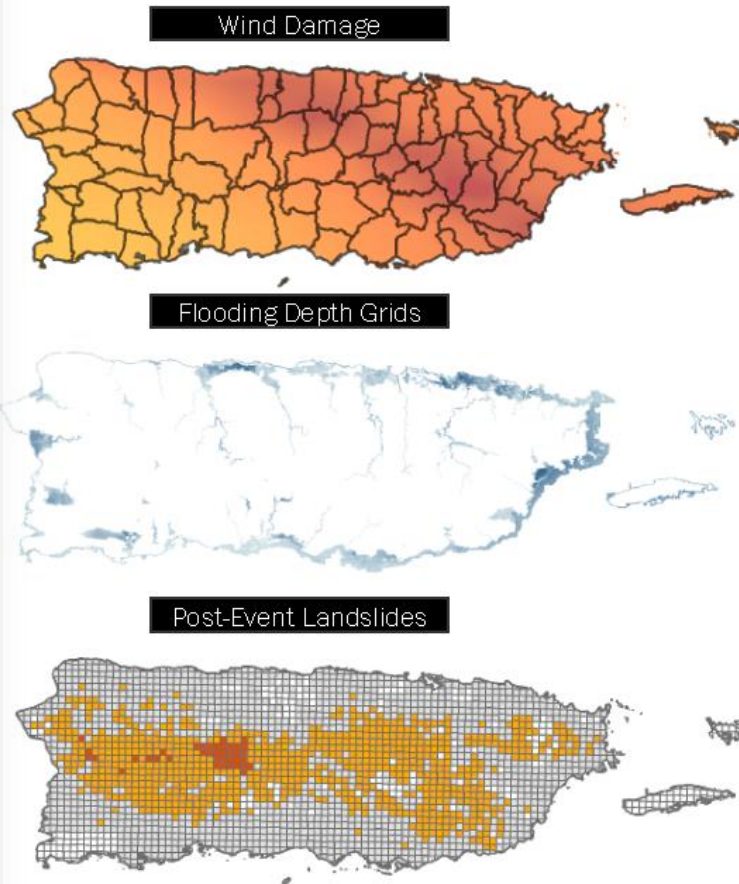


2017 Lessons : DATA ACCESSIBILITY

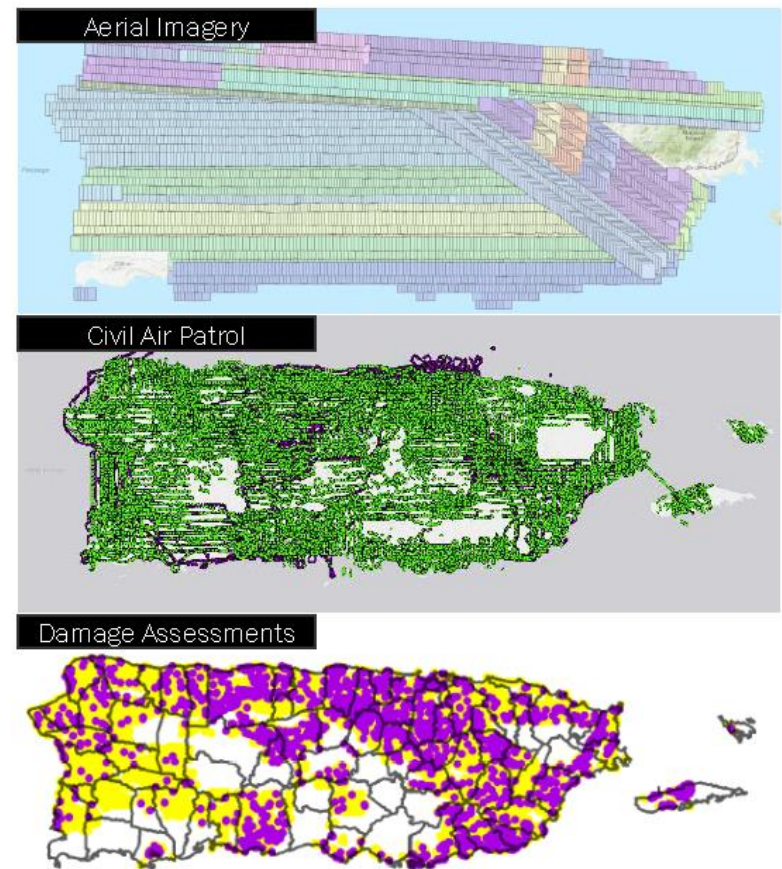
Data Accessibility

- 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



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:

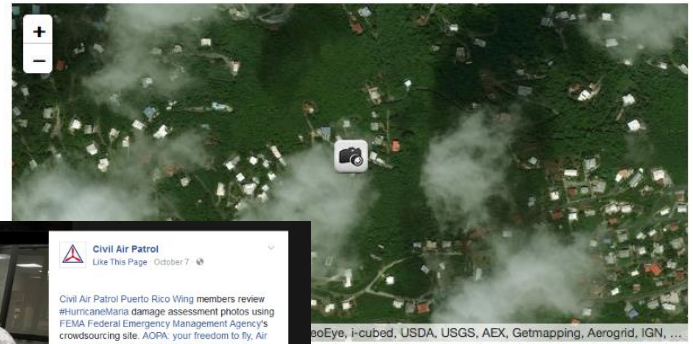
Event: CAP - Hurricane Irma

Team: 17-1-5752

Mission: A0011

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

Altitude: 491(m)



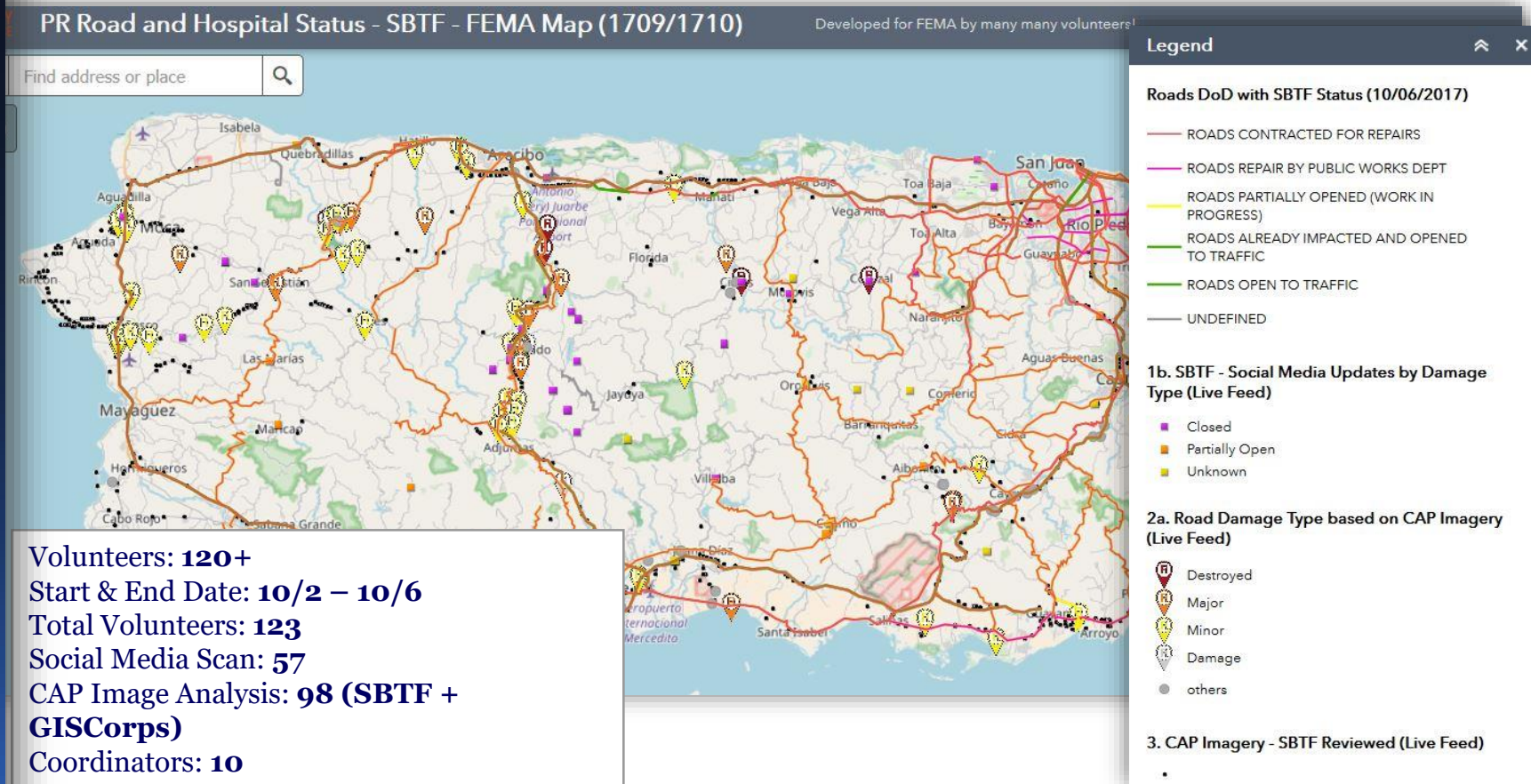
<< Previous Image Submit Skip - New Image



FEMA



Example: Road & Bridge Status with Hospitals Map



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

FOOD ACQUISITION INDEX

Households Supported by Grocery Box Delivery

7571

Number of meals that will be ordered for the municipality based on the Food Acquisition and Social Vulnerability Indexes.

Priority Level

High

Algorithm based on private and public sector data to determine the capability of acquiring food and water.

Social Vulnerability Index

0.4546

0 → 1.0

Power

*Not correlated to population



2%

SOURCE: Autoridad de Energia

Communications

*Not correlated to population



37%

SOURCE: FCC

National Guard Data

Daily Meal Pallets 74 Target Daily Meals 37

Daily Water Pallets 55 Target Daily Water 29

Supply



Grocers and Supermarkets Operational

97%

SOURCE: Mercado, Industria y Distribucion de Alimentos (MIDA)



Open Schools

47%

SOURCE: Department of Education

Water

Non-PRASA EPA Green Results 14%

SOURCE: EPA



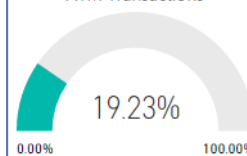
PRASA Clients Receiving Water 74%

SOURCE: PRASA

Oasis Availability 0

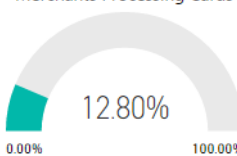
Payment

ATM Transactions



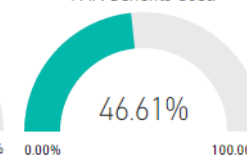
SOURCE: Association of Banks of PR

Merchants Processing Cards



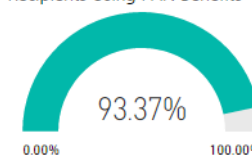
SOURCE: VISA

PAN Benefits Used



SOURCE: EVERTECH

Recipients Using PAN Benefits



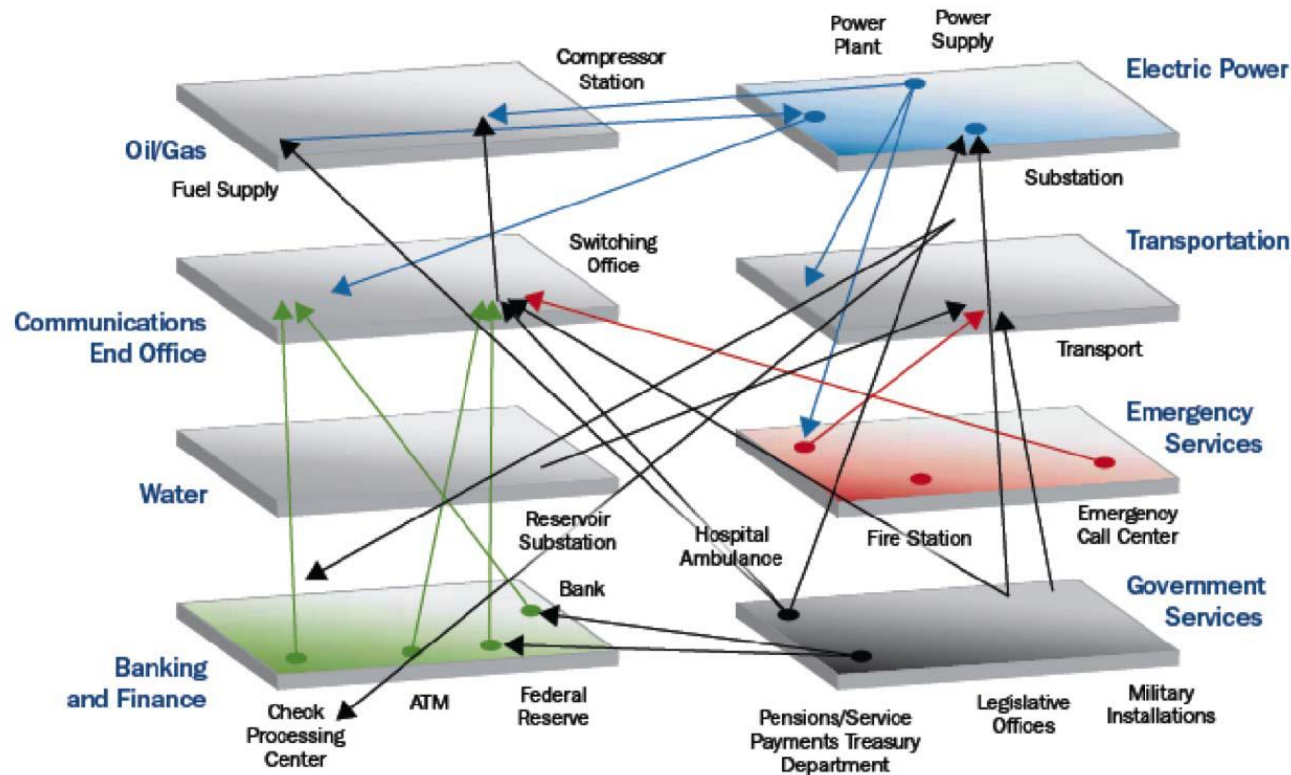
SOURCE: EVERTECH

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

2017 Lessons :

INFRASTRUCTURE INTERDEPENDENCIES

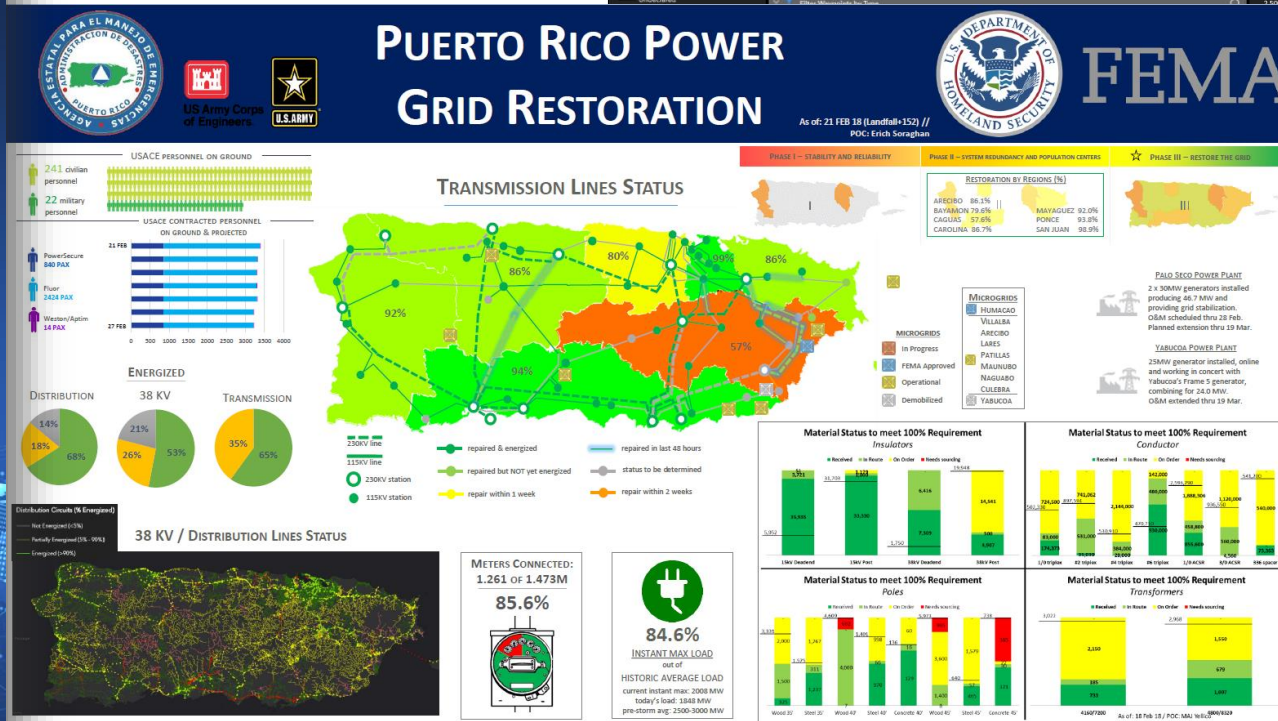
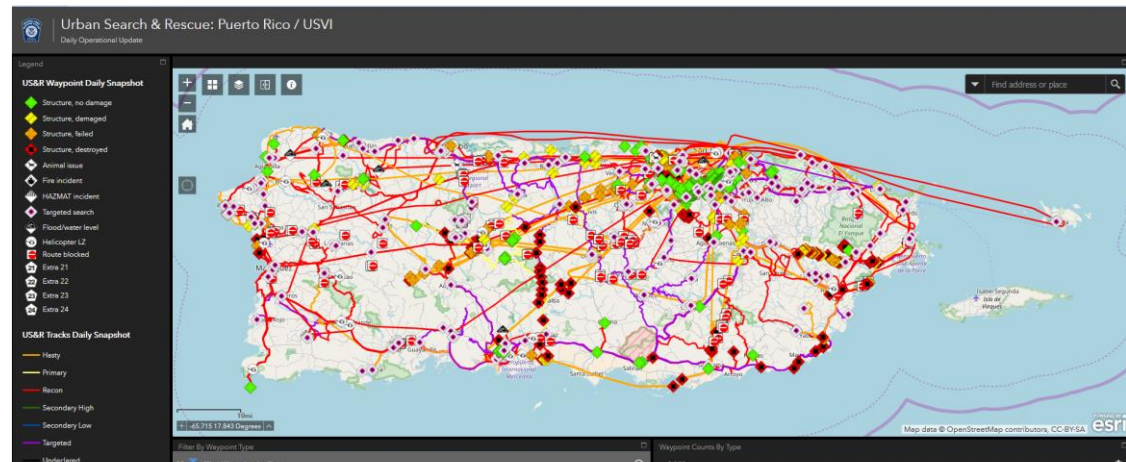
- Adapting to a lack of situational awareness across the 16 sectors
- Accounting for Sector capability shortfalls (e.g., lack of bandwidth)
- Accounting for Sector operational adjustments (e.g., work-arounds)
- Supporting resource prioritization



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

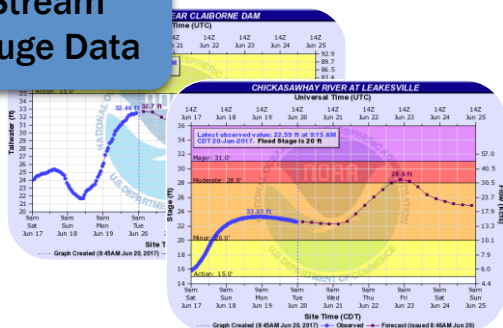


GIS-display of
situational
awareness and
program
effectiveness to
senior leadership

2017 Lessons : DAMAGE ASSESSMENTS

Modeling and imagery helps to determine level of damage

Stream
Gauge Data



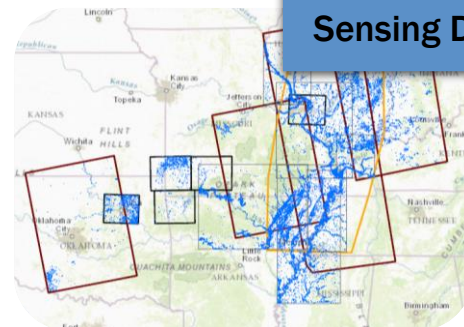
Structural
Dataset



Flood Extent
/ Depth Grid



Remote
Sensing Data



Modeled
Impacts



FEMA



EVENT



Determine
AOI



Obtain Data



Create Flood
Depth Grid



Create Damage
Estimates

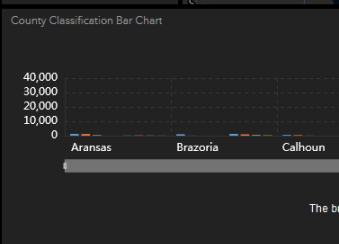
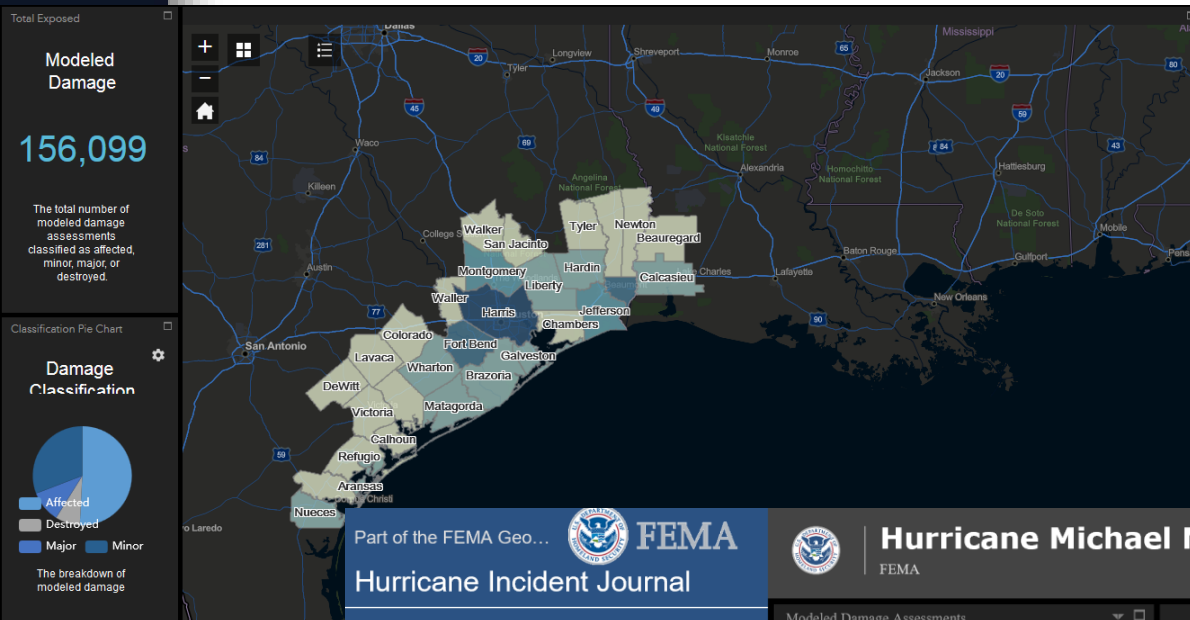


Validate
with
Imagery



Produce
Reports/
Updates

Damage Assessments: Dashboards



Modeled Damage Assessments

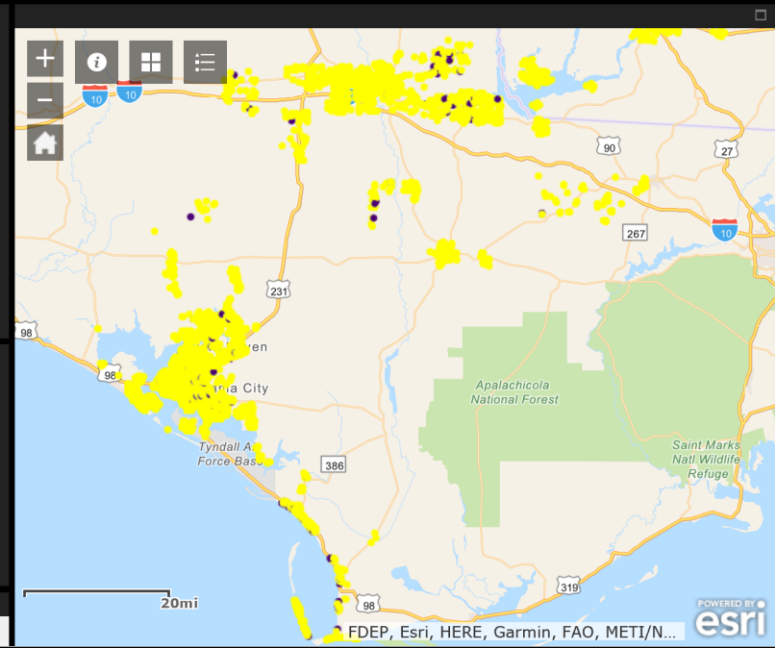
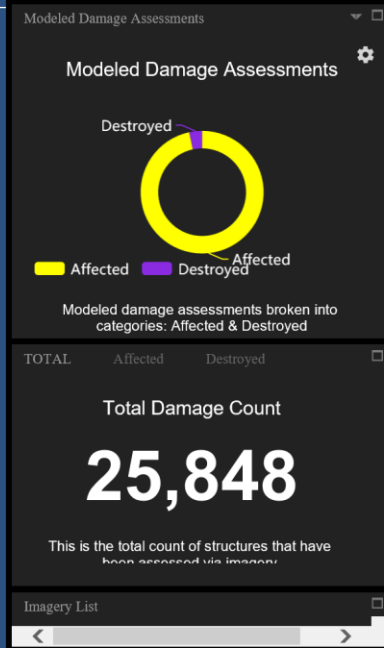
Hurricane Michael visual imagery geospatial damage assessments are updated daily to provide rapid situational awareness of the number of structures impacted by Hurricane Michael.

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

[Hurricane Michael Modeled Damage Assessments App](#)

Individual Assistance Registrations

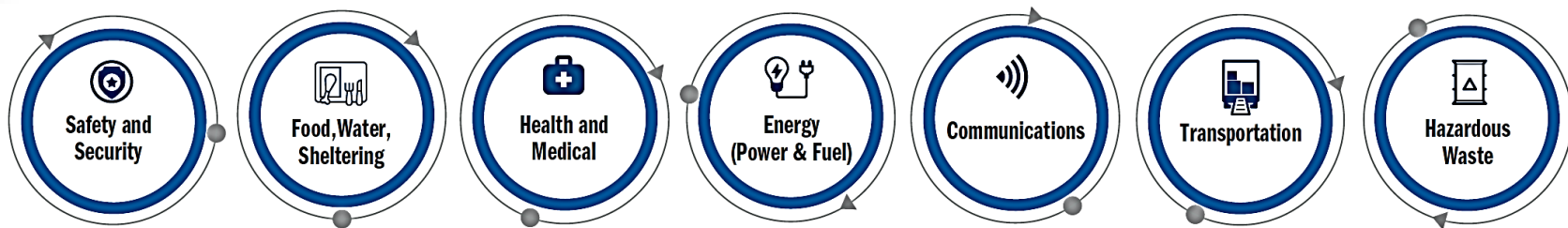
Hurricane Michael Modeled Damage Assessments



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)

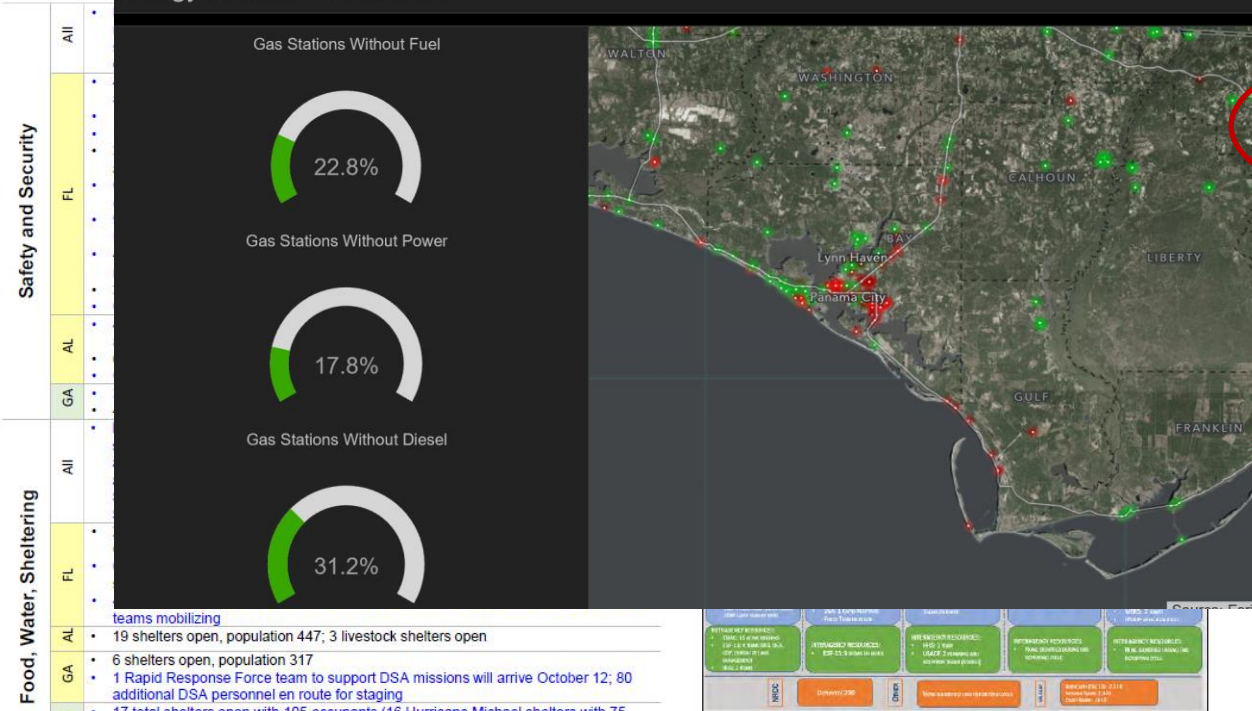
Current Situation

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).

Region IV	FL		GA	
	AL		NC	
			SC	

Energy Lifeline - Dashboard



Food, Water, Sheltering	All	• teams mobilizing
	FL	• 19 shelters open, population 447; 3 livestock shelters open
Health and Medical	GA	• 6 shelters open, population 317
	NC	• 1 Rapid Response Force team to support DSA missions will arrive October 12; 80 additional DSA personnel en route for staging
Key Updates	SC	• 17 total shelters open with 105 occupants (16 Hurricane Michael shelters with 75 occupants; 1 Hurricane Florence shelter with 30 occupants)
	AL	• 15 total shelters open with 507 occupants (5 Hurricane Michael shelters with 0 occupants; 10 Hurricane Florence shelter with 507 occupants)
Key Updates	All	• 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.
	FL	• 6 DMATs staged across Jacksonville, Panama City, and Baton Rouge, LA
Key Updates	GA	• Staging 308 ground ambulances and 125 para-transit to support patient movement
	AL	• 4 hospitals, 41 dialysis centers, and 11 nursing facilities closed; 11 assisted living facilities and 5 adult care homes evacuated
Key Updates	NC	• 1 Incident Management Team, 1 DMAT, 1 Disaster Mortuary Operational Response (DMORT) Assessment Team staged in Mobile; 1 additional DMAT en-route
	SC	• 60 ground ambulances staged

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

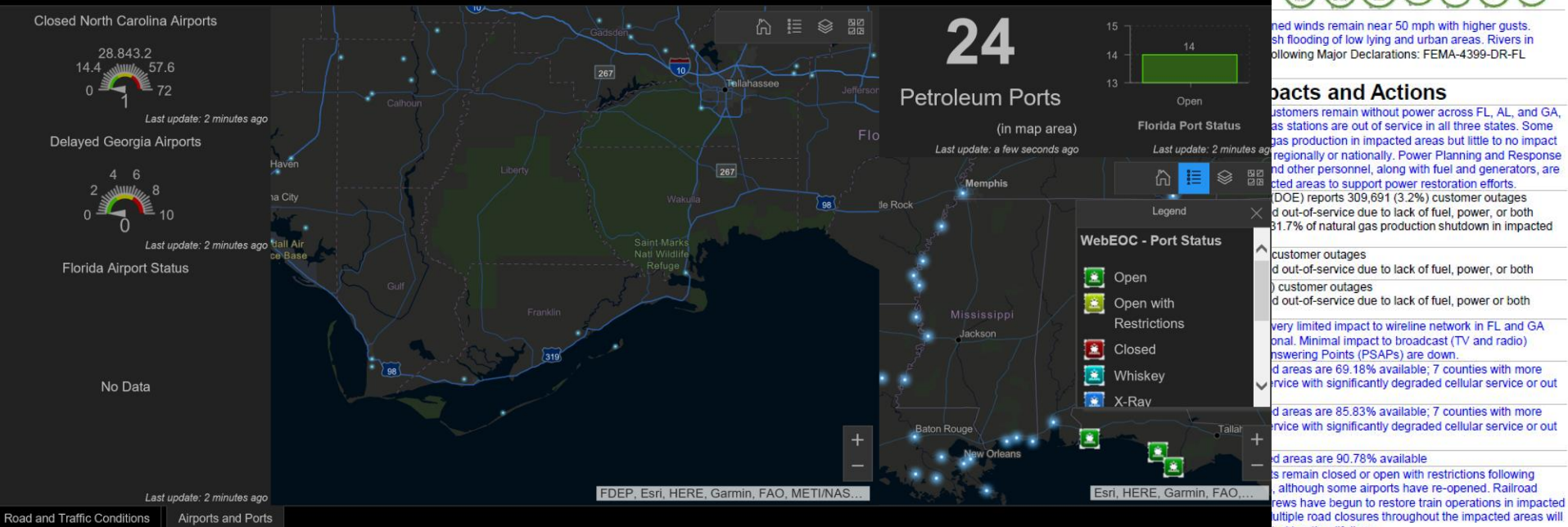
State/Local Response: AL EOC Level I (Full Activation); Governor declared State of Emergency statewide (all 67 counties). FL EOC Level I (Full Activation); Governor declared a State of Emergency for 35 counties. GA EOC Level I (Full Activation); Governor declared a State of Emergency for 108 (+41) counties.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

Lifelines: Impacts and Actions

Energy	All	• 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 but 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.
	FL	• U.S. Department of Energy (DOE) reports 309,691 (3.2%) customer outages
Communications	FL	• 5.7% of gas stations reported out-of-service due to lack of fuel, power, or both
	AL	• 42.3% of oil production and 31.7% of natural gas production shutdown in impacted areas
Transportation	GA	• DOE reports 60,905 (2.4%) customer outages
	All	• 1.2% of gas stations reported out-of-service due to lack of fuel, power, or both
Hazardous Waste	GA	• DOE reports 336,364 (7.1%) customer outages
	All	• 2.3% of gas stations reported out-of-service due to lack of fuel, power or both
Key Updates	All	• 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	• 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
Key Updates	GA	• 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
	AL	• Cellular networks in impacted areas are 90.78% available
Key Updates	All	• 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.
	FL	• Destin Ft. Walton Beach Airport open
Key Updates	GA	• Tyndall Air Force Base (PAM) closed, will re-open October 15, 11:00 a.m.
	All	• Apalachicola Regional - Cleve Randolph Field closed except for military and hurricane relief aircraft
Key Updates	FL	• Northwest Florida Beaches International Airport open with limitations
	All	• All other airports in affected area are open with normal operations
Key Updates	FL	• Federal Aviation Administration issued two Temporary Flight Restrictions (TFRs) issued for airspace from Lake City, FL to Live Oak, FL
	GA	• Port of Pensacola open, Cedar Key and Panama City remain closed
Key Updates	AL	• All ports at Tarpon Springs and any ports north of this area remain closed
	NC	• Dothan Regional Airport (DHN) open
Key Updates	SC	• Gulf Intracoastal Waterway open with restrictions (closed from mile marker 166 east)
	GA	• Chattahoochee River open with restrictions (closed north of Walter F. George Lock and Dam)
Key Updates	All	• All airports open
	FL	• Port of Savannah and Port of Brunswick open with restrictions
Key Updates	GA	• 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.
	NC	



Transportation Lifeline - Dashboard



Food, Water, Shelter	FL	<ul style="list-style-type: none"> 24 additional counties added to SNAP, with eligibility for food benefits between October 10 and October 28 6 (-7) counties under mandatory evacuation; 4 (-5) counties under voluntary 42 shelters open with 6,725 occupants 4 DSA teams deploying October 12 to support shelters, 6 DSA-trained FEMA Corps teams mobilizing
	AL	<ul style="list-style-type: none"> 19 shelters open, population 447; 3 livestock shelters open
	GA	<ul style="list-style-type: none"> 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
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GA		

[illegible]

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	Transportation	Hazardous Waste
	FL	
	AL	
	GA	
	NC	
	SC	
	VA	
	WV	
	MD	
	DE	
	PA	
	NY	
	CT	
	RI	
	MA	
	NH	
	VT	
	ME	
	NJ	
	CT	
	NY	
	PA	
	DE	
	MD	
	VA	
	NC	
	SC	
	GA	
	AL	
	FL	

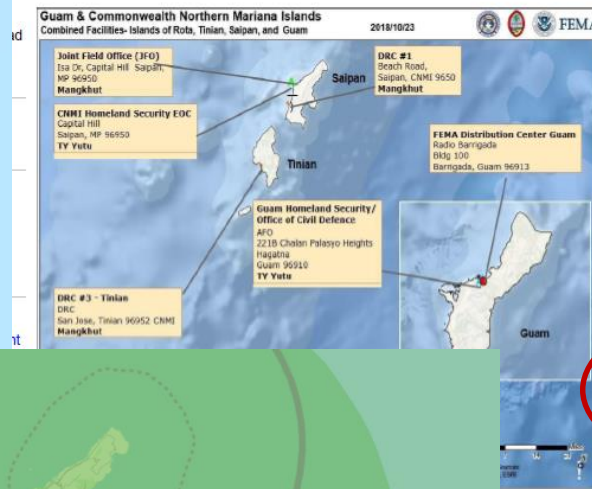
Linking Imagery to Objectives



Current Situation

No significant weather threats in the Eastern Pacific. There are a few disturbances in the area, but they pose no threat to the United States. High surf advisories have been cancelled. Stabilization and restoration of critical lifelines remain the top priority. Assessments of the impact continues while key capabilities flow into Saipan and Tinian. Primary areas of focus are long term sheltering and power restoration. Generators are being delivered into CNMI along with crews to conduct installations. Local businesses continue to open, providing access to food and commodities.

The President approved a Major Disaster Declaration (FEMA-4404-DR) for CNMI on October 26 for Individual Assistance, Public Assistance (Category B, including direct federal assistance, at 100% Federal funding of total eligible costs for 30 days, followed by 75% thereafter), and Hazard Mitigation. The President approved an Emergency Declaration (FEMA-3408-EM) for CNMI on October 23 for Public Assistance (Category B) limited to Direct Federal Assistance. As of October 29 as of 7:00 a.m. EDT, CNMI Individual Assistance includes 2,449 (+665) registrations with 2,266 assistance and other needs.



Senior Leadership Brief – Typhoon Yutu October 29, 2018 (5:00 p.m. EDT)

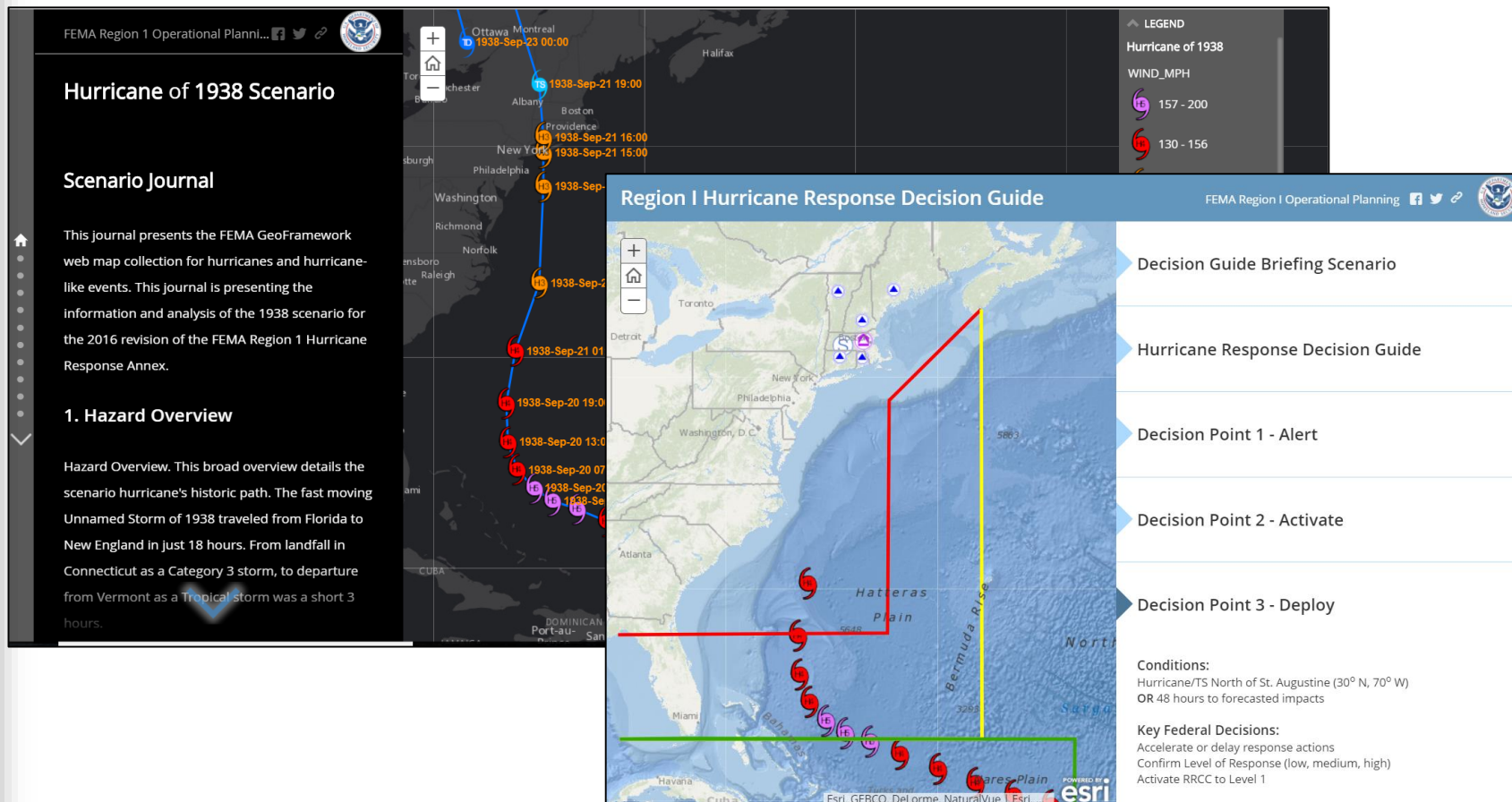


Lifelines: Impacts and Actions

Energy	All	<ul style="list-style-type: none"> 71 of 76 pre-installation inspections complete; 2 generators installed on Tinian
	Saipan	<ul style="list-style-type: none"> Feeder 1 online, 8 other feeders confirmed offline; restoration pending field assessments and repairs at power plant 35 FEMA generators and 1 bill of materials kit (generator) in Saipan; installations scheduled to begin October 30 11 of 19 gas stations operational Approximately 18,500 (99%) customers without power
	Tinian	<ul style="list-style-type: none"> Feeders 1-4 offline; 754 downed power poles and 95 damaged transformers 2 generator installations ongoing October 29 One gas station (diesel and gasoline) has fuel but both dispensers inoperable, technician on site, parts for repairs ETA October 30 Approximately 1,120 (100%) customers without power All 3 feeders online Power nearly 99% restored, CUC planning to move crews from Rota to support Tinian Cellular, internet, and landline services operational for those with power
Communications	Rota	
	Saipan	<ul style="list-style-type: none"> No estimated timeline for full restoration of network due to extensive infrastructure damage
	Tinian	<ul style="list-style-type: none"> No limiting factors to report
Transportation	All	<ul style="list-style-type: none"> As of October 29, 3,382 tourists total have departed CNMI Public transportation systems not operational Airport debris clean-up continues; portions of facility running on generator; 350KW generator arrived on Saipan with technician; installation October 30 With exception of power poles (dragged to side), road clearance operations completed on all primary and secondary roads; debris removal ongoing All processing at airport being conducted manually and remaining five gates need repair; commuter airline terminal destroyed; normal passenger operations in a few weeks 6 international flights per day; inbound flights limited to returning residents and humanitarian assistance; passenger loading bridges out of service; portable stairs can only be used with certain aircraft; 4 truck mounted stair systems are being sourced Estimate 1,882 additional tourists will depart today Mobile air traffic control tower ETA November 1 Debris clearance on roads ongoing to ensure emergency access and clearance of primary, secondary, and tertiary roads Flight operations limited to humanitarian aid, medical referrals, and relief goods USCG Sequoia repaired aids to navigation that sustained minor damage Roads passable; debris clearance on main roads on-going
	Saipan	
	Tinian	
Tourism	Rota	
	All	<ul style="list-style-type: none"> No limiting factors to report

Planning and Exercises

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





FEMA