

Disaster Response and GIS

Brent Jones, PE, PLS

Esri



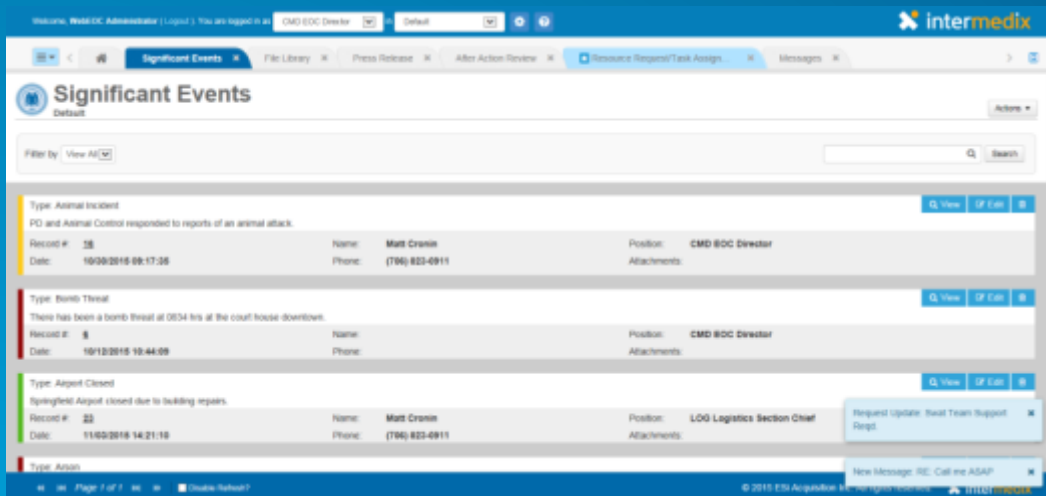
Agenda:

- WebEOC
- What is Web GIS?
- Collect & Connect to Your Data
- Enable & Manage Your Mobile Workforce
- Pick the Apps for your Workflow
- Q&A



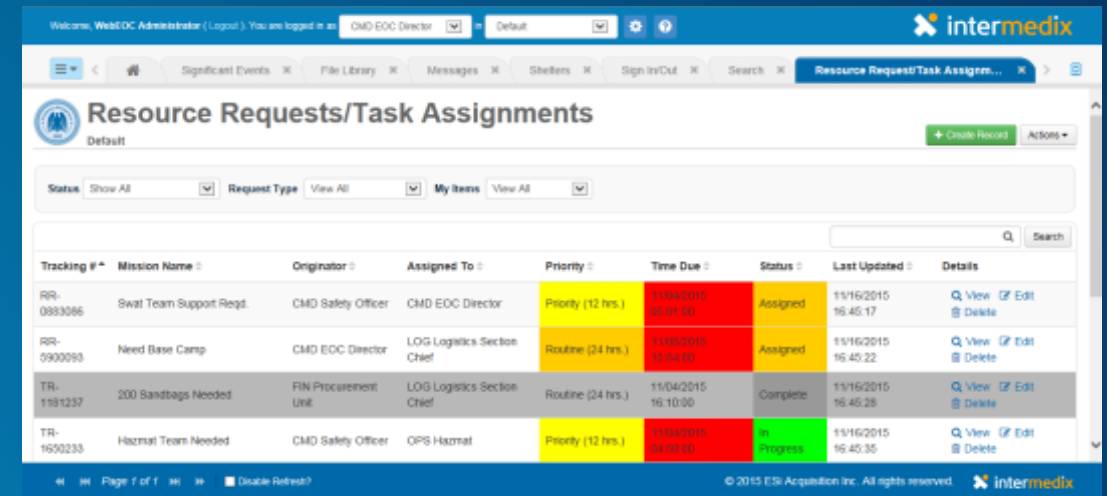
WebEOC

Web-based information management system that provides a single access point for the collection and dissemination of emergency or event-related information



The screenshot shows the 'Significant Events' page in the WebEOC interface. It features a search bar and a list of events. The first event is an 'Animal Incident' with record # 35, dated 10/20/2015 09:17:35, involving Matt Cranin, CMD EOC Director. The second event is a 'Bomb Threat' with record # 5, dated 10/12/2015 10:44:09, also involving Matt Cranin, CMD EOC Director. The third event is an 'Airport Closed' with record # 22, dated 11/02/2015 14:21:10, involving Matt Cranin, LOG Logistics Section Chief. The page includes navigation tabs like 'Significant Events', 'File Library', 'Press Release', and 'Messages'.

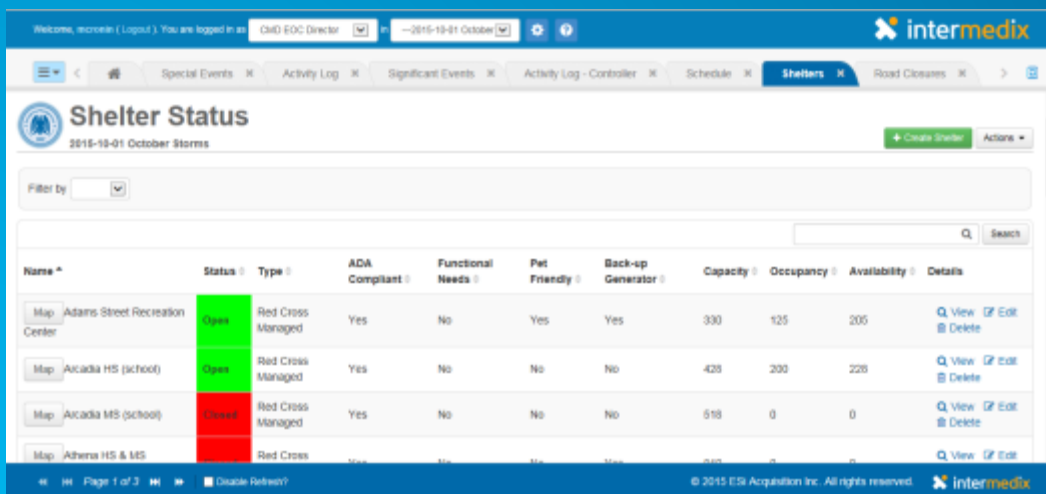
Situational Awareness / Significant Events



The screenshot shows the 'Resource Requests/Task Assignments' page. It displays a table with columns for Tracking #, Mission Name, Originator, Assigned To, Priority, Time Due, Status, Last Updated, and Details. The table contains five rows of data:

Tracking #	Mission Name	Originator	Assigned To	Priority	Time Due	Status	Last Updated	Details
RR-0893086	Swat Team Support Req.	CMD Safety Officer	CMD EOC Director	Priority (12 hrs.)	11/16/2015 09:07:50	Assigned	11/16/2015 16:45:17	View Edit Delete
RR-5900053	Need Base Camp	CMD EOC Director	LOG Logistics Section Chief	Routine (24 hrs.)	11/16/2015 15:54:00	Assigned	11/16/2015 16:45:22	View Edit Delete
TR-1181237	200 Sandbags Needed	FIN Procurement Unit	LOG Logistics Section Chief	Routine (24 hrs.)	11/04/2015 16:10:00	Complete	11/16/2015 16:45:25	View Edit Delete
TR-1650233	Hazmat Team Needed	CMD Safety Officer	OPS Hazmat	Priority (12 hrs.)	11/16/2015 04:50:00	In Progress	11/16/2015 16:45:35	View Edit Delete

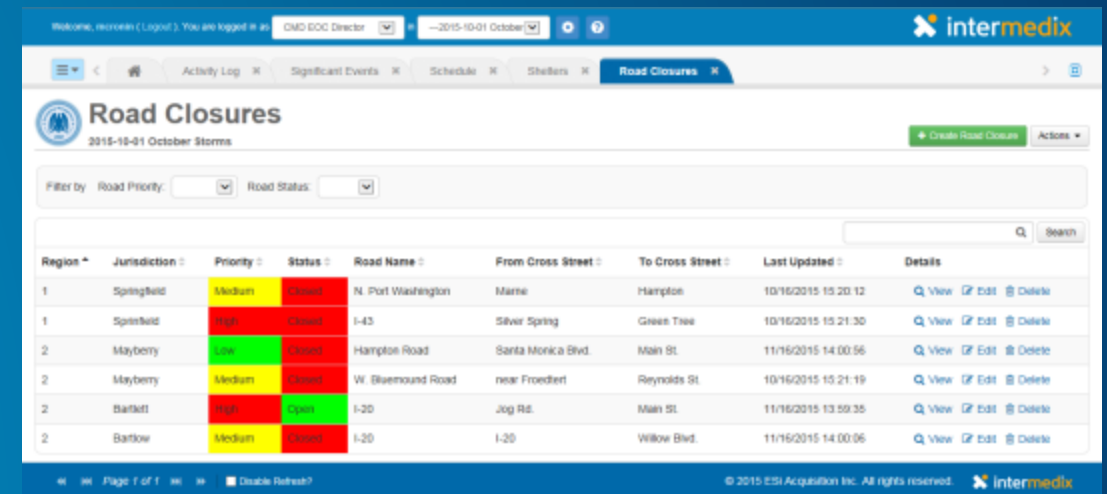
Resource Management / Missions



The screenshot shows the 'Shelter Status' page for the 2015-10-01 October Storms. It features a table with columns for Name, Status, Type, ADA Compliant, Functional Needs, Pet Friendly, Back-up Generator, Capacity, Occupancy, Availability, and Details. The table lists three shelters:

Name	Status	Type	ADA Compliant	Functional Needs	Pet Friendly	Back-up Generator	Capacity	Occupancy	Availability	Details
Adams Street Recreation Center	Open	Red Cross Managed	Yes	No	Yes	Yes	300	125	200	View Edit Delete
Arcadia HS (school)	Open	Red Cross Managed	Yes	No	No	No	425	200	220	View Edit Delete
Arcadia HS (school)	Closed	Red Cross Managed	Yes	No	No	No	518	0	0	View Edit Delete

Mass Care / Shelters

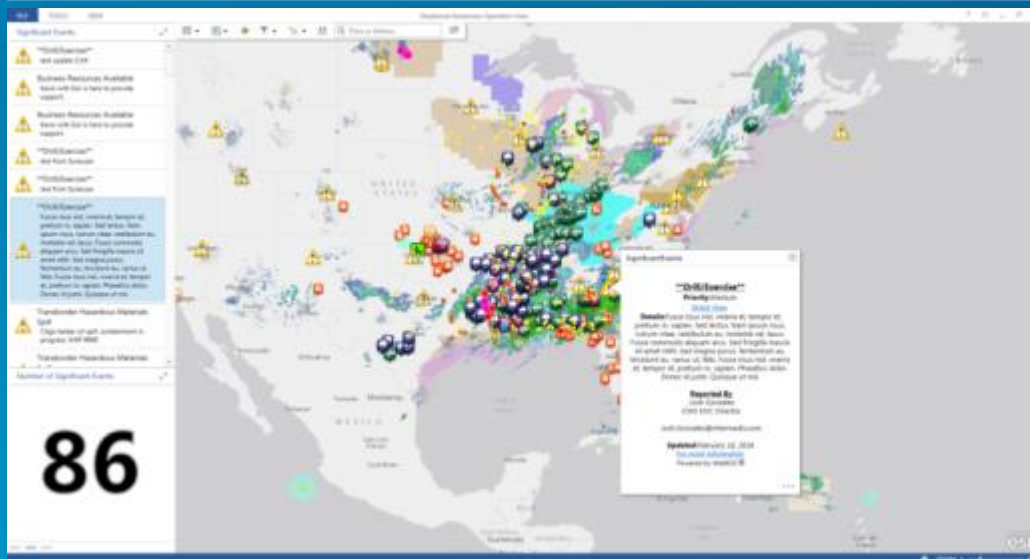


The screenshot shows the 'Road Closures' page for the 2015-10-01 October Storms. It features a table with columns for Region, Jurisdiction, Priority, Status, Road Name, From Cross Street, To Cross Street, Last Updated, and Details. The table lists five road closures:

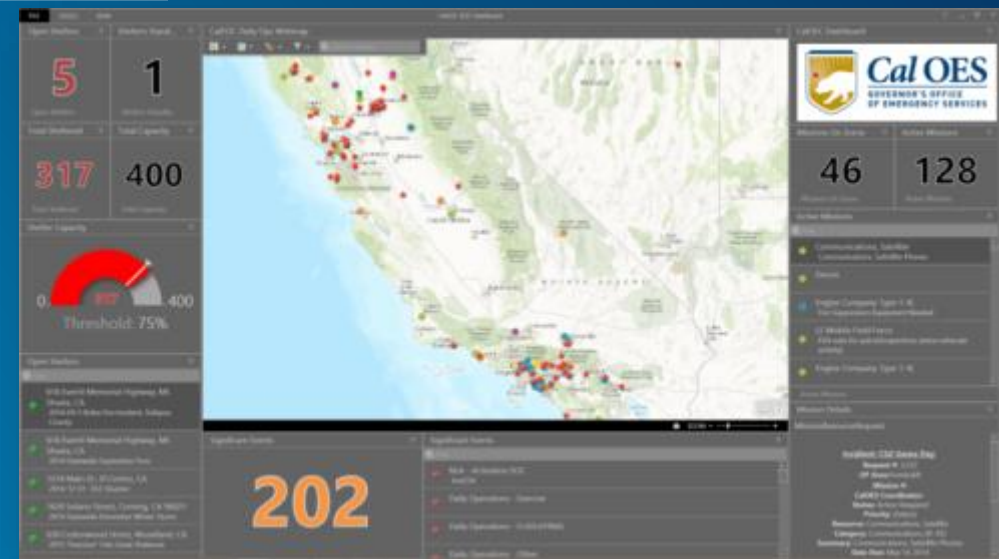
Region	Jurisdiction	Priority	Status	Road Name	From Cross Street	To Cross Street	Last Updated	Details
1	Springfield	Medium	Closed	N. Port Washington	Marine	Hampton	10/16/2015 15:20:12	View Edit Delete
1	Springfield	High	Closed	I-45	Silver Spring	Green Tree	10/16/2015 15:21:30	View Edit Delete
2	Mayberry	Low	Closed	Hampton Road	Santa Monica Blvd.	Main St.	11/16/2015 14:00:56	View Edit Delete
2	Mayberry	Medium	Closed	W. Blumound Road	near Froedtert	Reynolds St.	10/16/2015 15:21:19	View Edit Delete
2	Balford	High	Open	I-20	Jog Rd.	Main St.	11/16/2015 13:59:35	View Edit Delete

Transportation / Road Closures

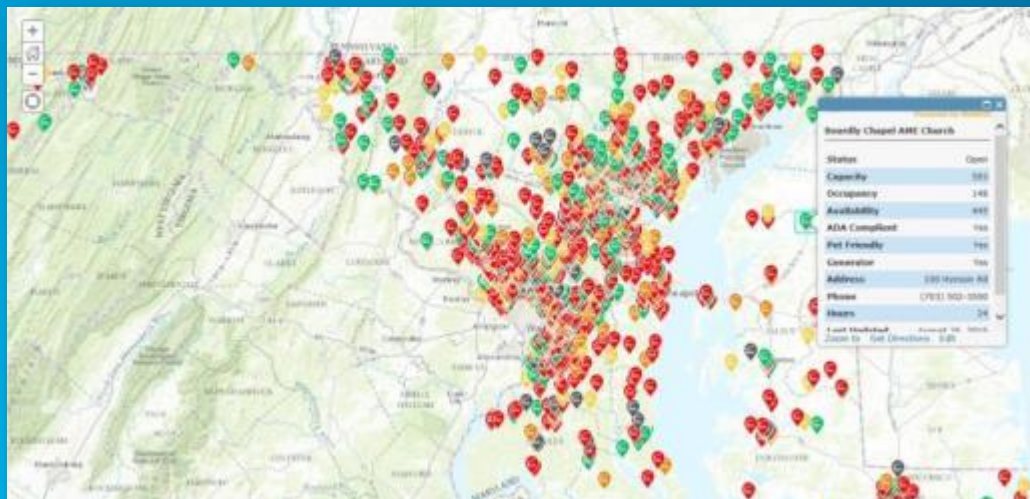
Common Emergency Management Needs



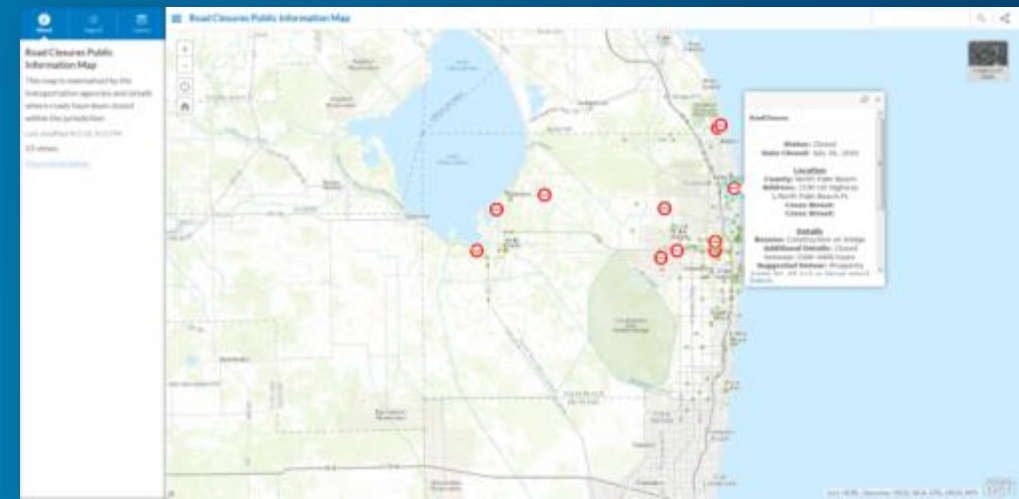
Situational Awareness / Significant Events



Resource Management / Missions



Mass Care / Shelters



Transportation / Road Blocks

Web GIS

Basic elements of a web GIS

- An **application(s)** that supports a user's requirement
 - Combines web maps/services into a user-friendly application
 - Tools in the application help answer specific user questions
- A **web map** organizes your **data**
 - Operational, or real-time, data layers showing current status
 - One or more datasets from your GIS system of record.
 - Digital base maps for context



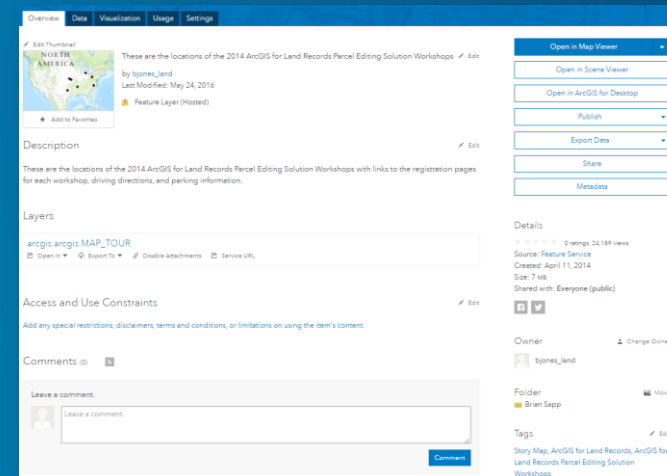
Web Services

Organizes and Securely Sharing Data.....

https://

- Secure/Identity
- Standards-based
- Controlled Access via Identity
- Control Who Does What
 - View
 - Query
 - Edit
- Monitor/Track

<http://esriland.maps.arcgis.com/home/item.html?id=5969689b642840e39cf0491669484e0b>



Web GIS

A modern GIS approach that allows us to...

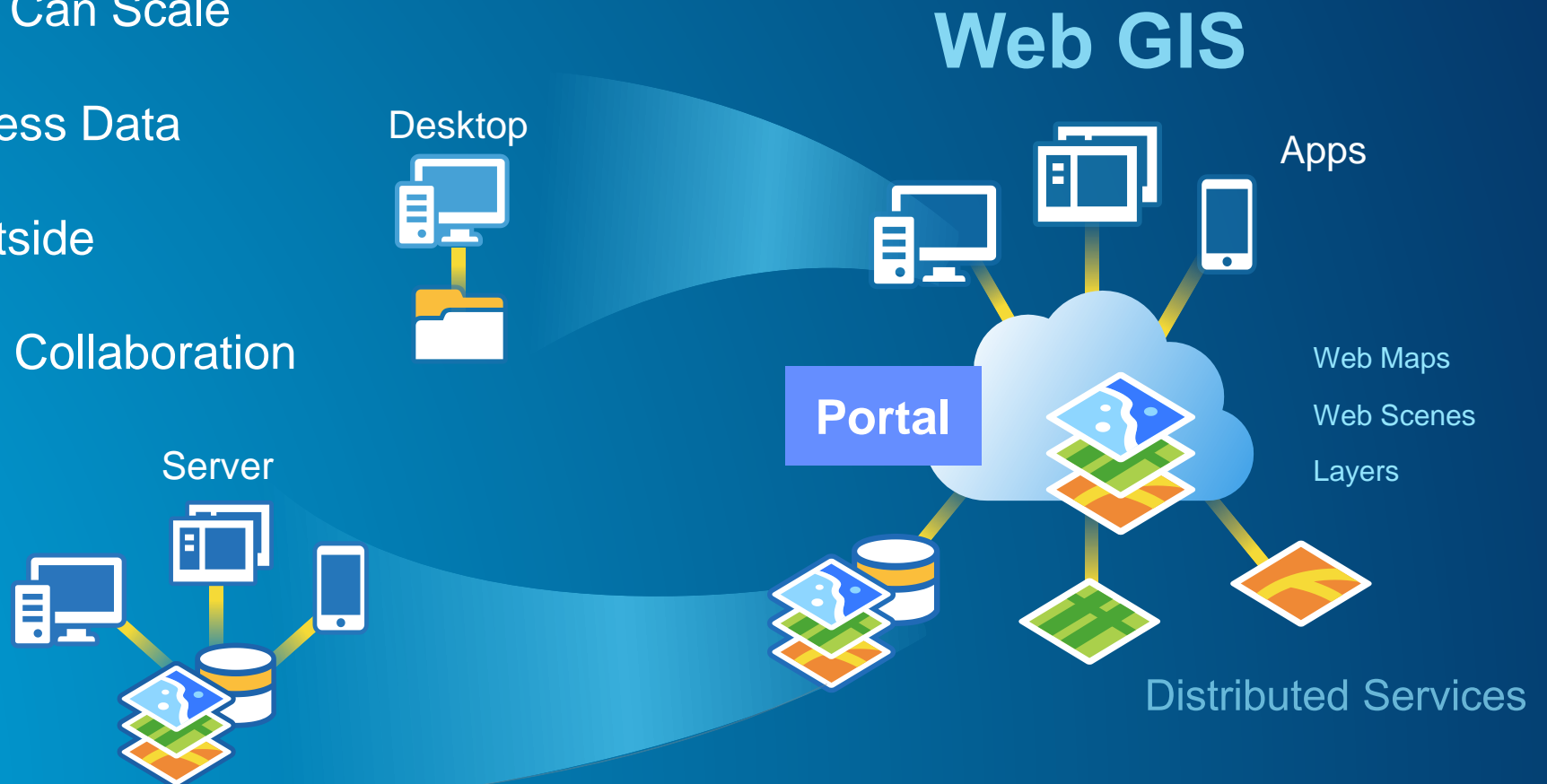
Support (Un)Common Workflows Quickly

Ensure Mission Critical Apps Can Scale

Combine Real-Time & Business Data

Enable Users Within and Outside

Foster Information Sharing & Collaboration



Web GIS Simplifies Working With All Types of Data

Connecting to Authoritative Sources – Not Replacing Them

Distributed

Creating
A Common Language



Supporting Every Mission

Web GIS enables your work through apps...



Keys to Web GIS Readiness



Collect and Connect
With Your Data



Enable & Manage
Your Mobile
Workforce



Pick the Apps for
your Workflow



Configure Mission-
Critical Apps

Adding Live Feeds from the Living Atlas

The image shows a screenshot of the Living Atlas web application. On the left, a navigation menu is visible with options like 'Home', 'My Map', 'Details', 'Add', and 'Basemap'. A dropdown menu is open, highlighting 'Browse Living Atlas Layers'. The main content area is titled 'Browse Living Atlas Layers' and includes a search bar with 'Earth Observations' selected. Below the search bar is a map of the United States and the Caribbean region, overlaid with various colored markers and shaded areas representing hurricane tracks. Specific hurricane events are labeled with names and dates, such as 'Katia' (2017-09-06, 75mph), 'Irma' (2017-09-08, 184mph), and 'Jose' (2017-09-06, 75mph). A 'CLOSE' button is located at the bottom right of the map area.

Home ▾ My Map

Details Add Basemap

About

Browse Living Atlas Layers

Guided tour

Browse Subscription Layer

Pick a tour to

Add Layer from Web

Add Layer from File

Add Map Notes

Learn to style a map

Browse Living Atlas Layers

Show Esri Layers Only Within map area

Earth Observations

2017-09-06 4:00 PM Wed CDT 75mph
2017-09-07 1:00 PM Thu CDT 86mph
2017-09-08 2:00 PM Fri AST 161mph
2017-09-09 2:00 PM Sat AST 115mph
2017-09-10 2:00 PM Sun AST 98mph
2017-09-11 2:00 PM Mon AST 121mph
2017-09-10 2:00 PM Sun AST 81mph
2017-09-08 3:00 PM Wed AST 184mph
2017-09-09 2:00 PM Sat AST 115mph
2017-09-08 2:00 PM Fri AST 115mph
2017-09-09 2:00 AM Fri AST 109mph
2017-09-06 2:00 PM Wed AST 75mph

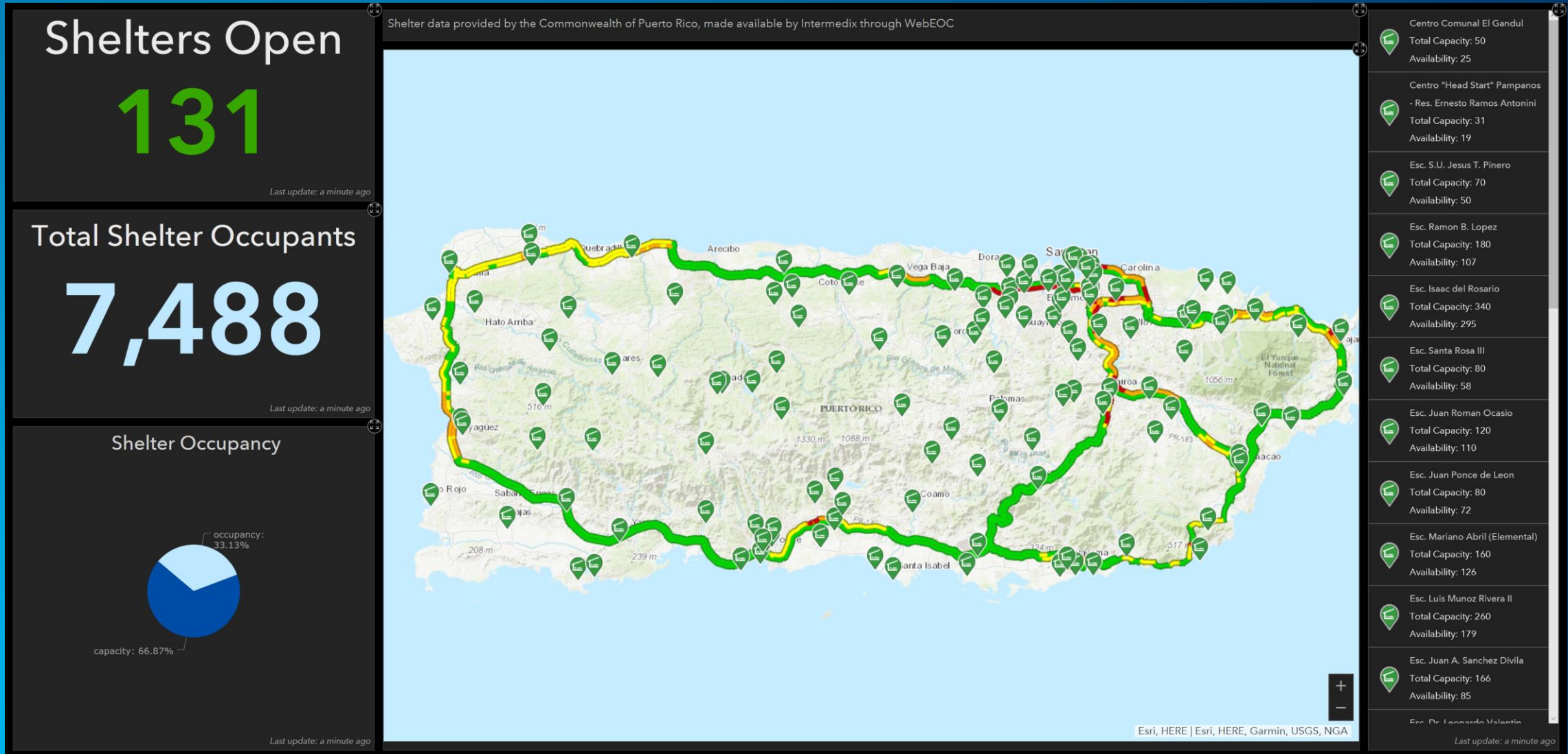
Katia
Irma
Jose

CLOSE

List of Feeds for the Hurricanes

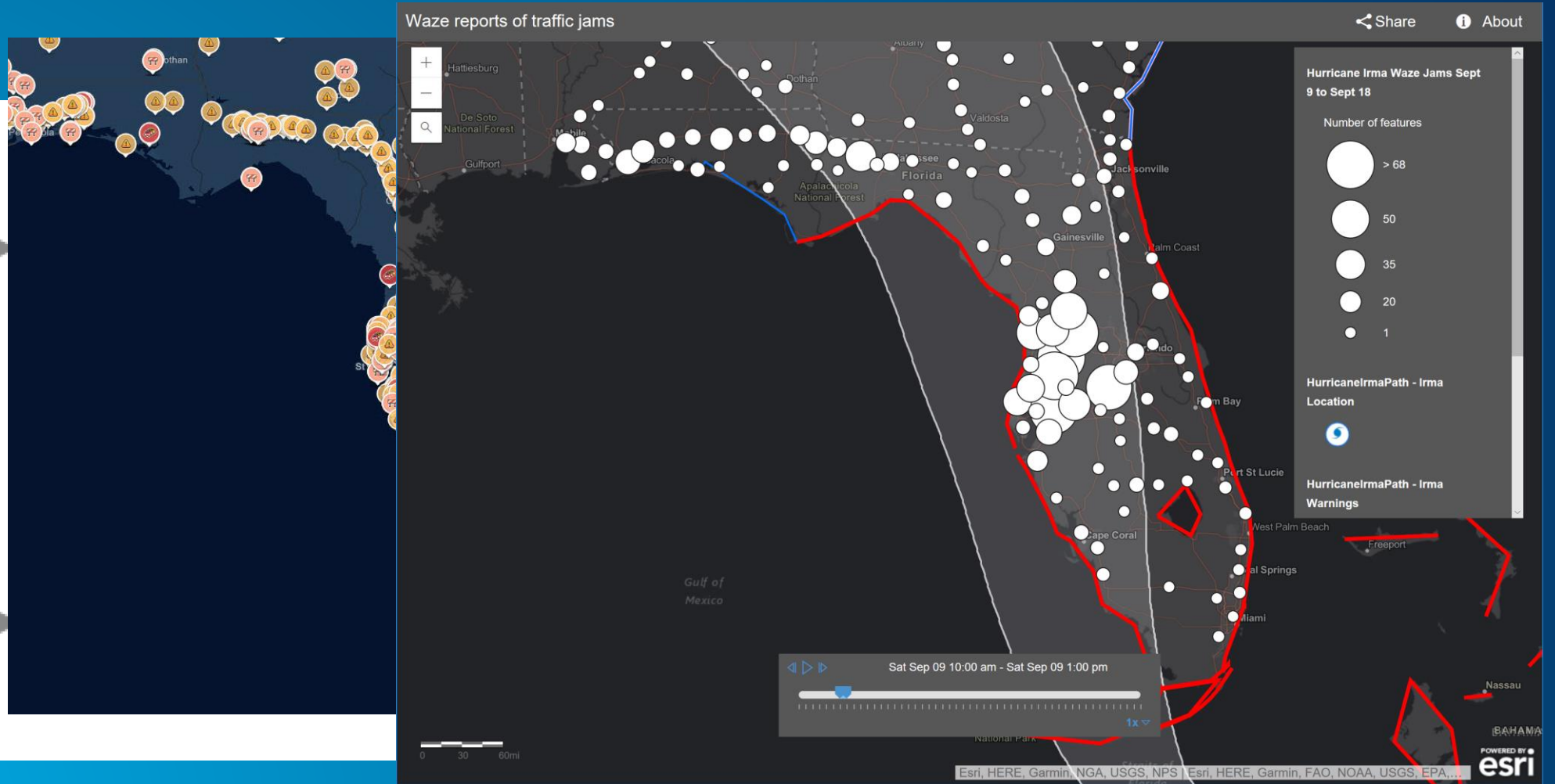
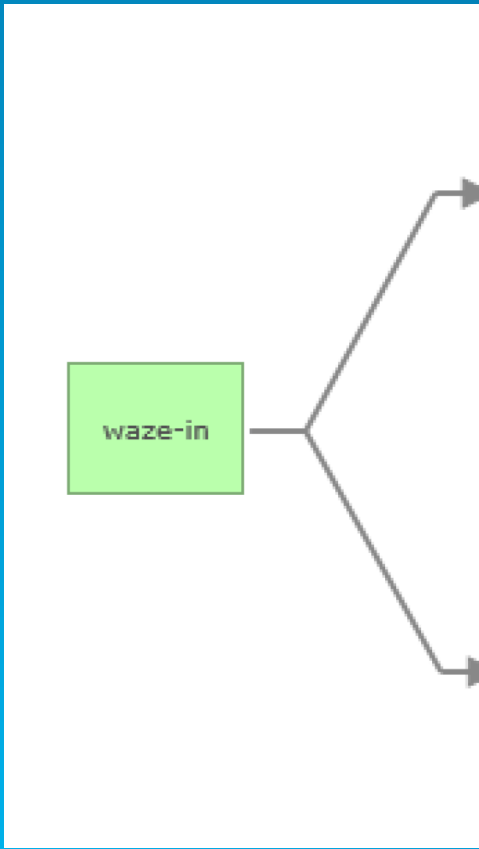
- **Active Hurricanes / Tropical Cyclones (Global)**
<http://www.arcgis.com/home/item.html?id=5b84e159dace4bf8ad9e9154085ba45d>
- **Precipitation Forecast (US)** <http://www.arcgis.com/home/item.html?id=71afd16b8845426e9435c5dbb9ca8ea6>
- **National Water Model (Hourly Anomaly Forecast)**
<https://www.arcgis.com/home/item.html?id=b9ec31770ee643509b942dfdec393b7f>
- **Surface Meteorological and Hydrologic Analyses - Quantitative Precipitation Estimates**
<https://www.arcgis.com/home/item.html?id=2b65b91dcfce4dddb235c61f62dc890d>
- **Live Stream Gauges (Flooding)** <https://www.arcgis.com/home/item.html?id=61003c853d2c4c338841429610b5747f>
- **Potential Storm Surge Flooding -**
http://nowcoast.noaa.gov/arcgis/rest/services/nowcoast/wwa_meteocean_tropicalcyclones_inundation/MapServer
- **Weather Radar**
 - NOAA - <http://www.arcgis.com/home/item.html?id=da53700b1f324cc685c4d3bcc00c12fc>
 - AccuWeather - <https://marketplace.arcgis.com/listing.html?id=3f6f5c74efb94e24a33f27dd0e9439b6>
- **Live Traffic -** <http://www.arcgis.com/home/item.html?id=ff11eb5b930b4fabba15c47feb130de4>

Connect to other Business Systems – WebEOC Example



Operationalize Data – Waze Example

Receive data from the Waze Connected Citizens Program



<http://www.arcgis.com/home/item.html?id=db18d2068d1d410595b841c3df38c280>

Geospatially Enable and Deploy All Data

Welcome, Esri (Logout). You are logged in as ArcGIS Extension in Demo

Home ▾ MD Shelters

Shelters x US W

Details Add Edit Basemap Analysis

Save Share Print Directions Measure Bookmarks Find address or place

Legend

MD_Shelters

- Closed
- Open
- Alert
- Standby
- Unknown

Filter by

Name ^	Status	ADA Com
1st Baptist Church of Suitland	Open	No
1st Bilingual Christian Church of Baltimore	Open	Yes
1st Spanish Christian	Open	Yes
1st Step 2 School	Open	No
4 Corners Community Nursery	Open	No
75th Street Medical Center	Open	No
A & K Family Learning Place	Open	No
A Busy Bee Learning Center	Open	Yes
Aba Productions	Closed	No
ABC & 123 Childcare Center	Closed	Yes

Choptank Community Health System

Status Standby

Capacity 233

Occupancy 58

Availability 175

ADA Compliant No

Pet Friendly No

Generator Yes

Address 933 S Talbot St

Phone (703) 923-2900

Hours

Zoom to Get Directions Edit

Esri.com ArcGIS Marketplace Help Terms of Use Privacy Contact Esri Report Abuse Contact Us

Map View Edit

Map View Edit

Map View Edit

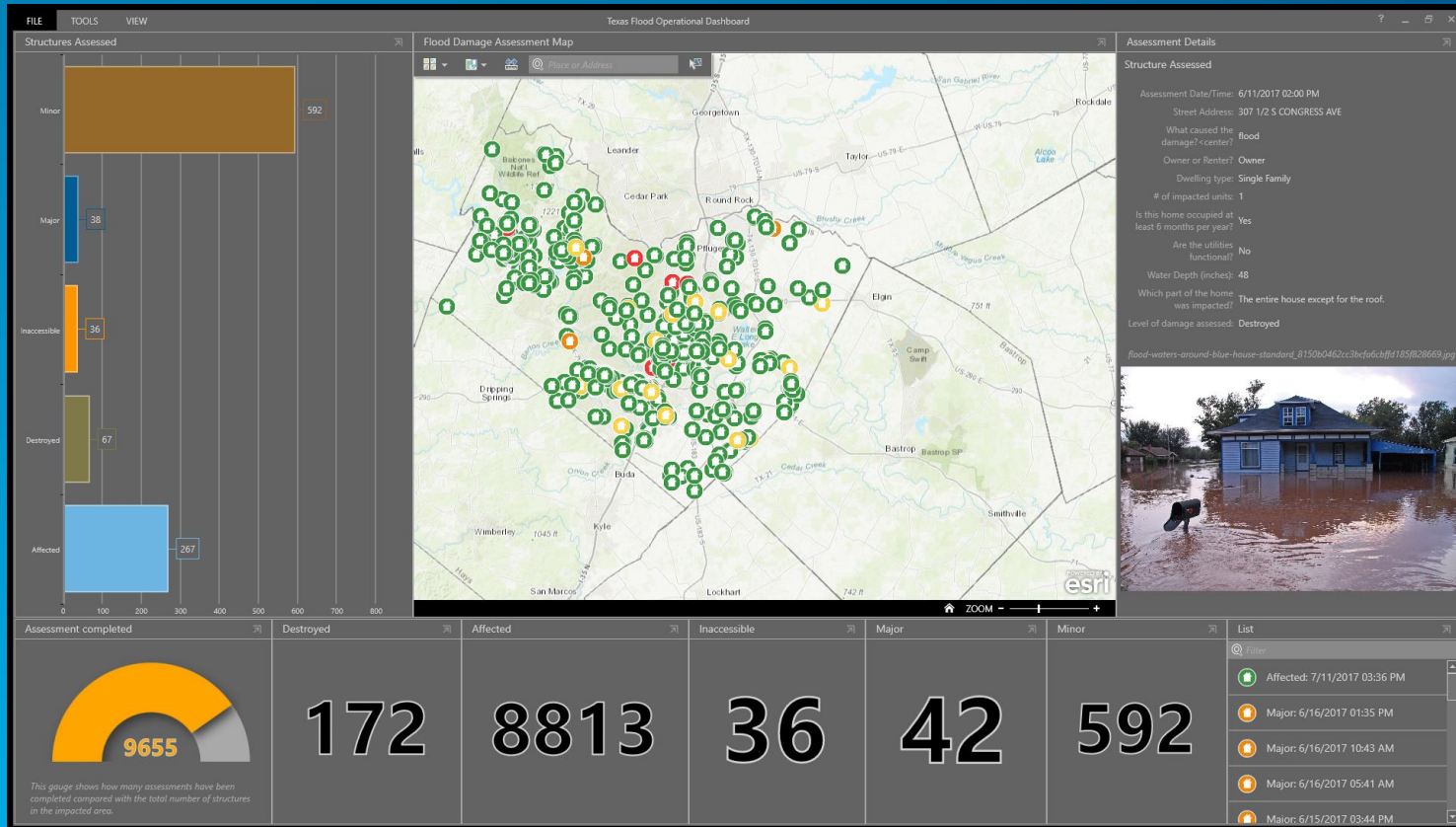
Page 1 of 67

Disable Refresh?

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Enable & Manage Your Mobile Workforce

Damage Assessment



Survey123 for ArcGIS

Preliminary Damage Assessment v0.5

Date & Time of assessment: *
11/2/2017 8:50 AM

Incident ID Number:
e.g. XXXXXX

Which program is this assessment for? *
 Individual Assistance
 Public Assistance

Street address of the dwelling:

What caused the damage? *
(select all that apply)

Drought Earthquake
 Explosion Fire
 Flood Hurricane
 Landslide Mudslide

International Association of Fire Chiefs (IAFC) Search and Rescue (SAR)

The image displays the IAFC Harvey Search and Rescue Survey Data application interface, which is divided into several sections:

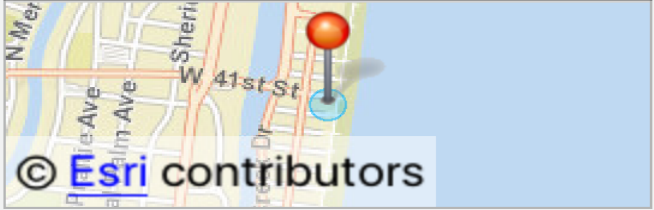
- Completed Surveys:** Shows 26 surveys completed. A red banner below this section states: "Data refreshed every minute. All numbers and charts are based on the current map extent and any...".
- Rescues Made:** Shows 8 rescues made.
- Additional Rescue:** Shows 1 additional rescue.
- Legend:** Defines the data points:
 - IAFC Harvey Search and Rescue Survey Data:
 - Not Rescued (Red dot)
 - Rescued (Blue dot)
 - Harvey Rescue Workers:
 - Not Working (Grey icon)
 - On Break (Yellow icon)
 - Working (Green icon)
- Map:** A central map showing the survey area with various units and rescue points. Units are labeled with codes like "UP VP", "UN VN", "UN", and "VP".
- Surveys by Unit:** A pie chart titled "ENTRIES BY UNIT" showing the distribution of surveys across different units. The legend includes: Boat4-4, Nc_Hart1, boat 2, boat 3, nc_Hart1, and nc_heart1.
- Rescues by Method:** A pie chart titled "RESCUES BY METHOD" showing the distribution of rescues by method. The legend includes: Boat, Helicopter, and No Assistance.
- Mobile App Interface:** A smartphone screen showing the application's mobile view. It includes a header "IAFC Harvey Search and Rescue", a "Pick up point" field with coordinates $38^{\circ}52'N$ $77^{\circ}22'W \pm 719.979$ m, a map, and several form fields:
 - Unit *
 - Rescued * (Yes/No radio buttons, No is selected)
 - Rescue Method (dropdown menu)
 - Refusal * (Yes/No radio buttons, No is selected)
 - Additional Rescue Needed * (Yes/No radio buttons, No is selected)
 - A text field for "What is needed for rescue" with a green checkmark button.

Verizon 11:20 AM 63%

IAFC Irma Search and Rescue

Pick up point *

25°49'N 80°7'W
± 65 m




Unit *

Rapid Entry (Photo Only)

Yes

No

Image of Rescue Site




Verizon 11:20 AM 62%

IAFC Impacts and Hazards



Location

25°49'N 80°7'W
± 65 m



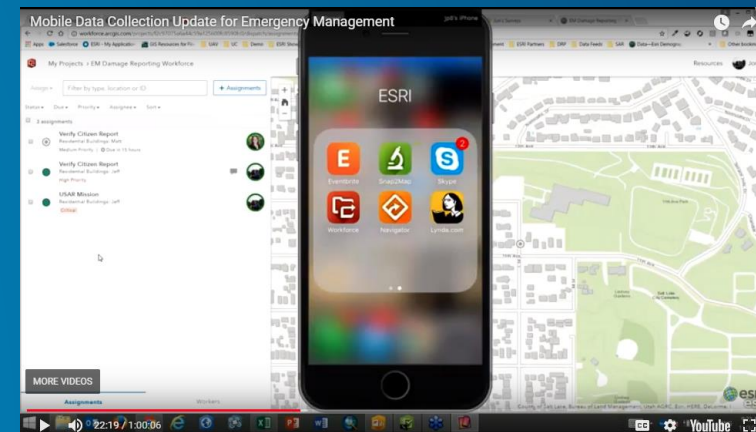
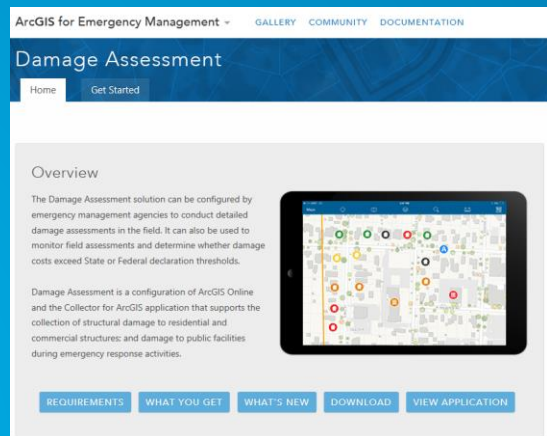
Unit

Image of Impact or Hazards



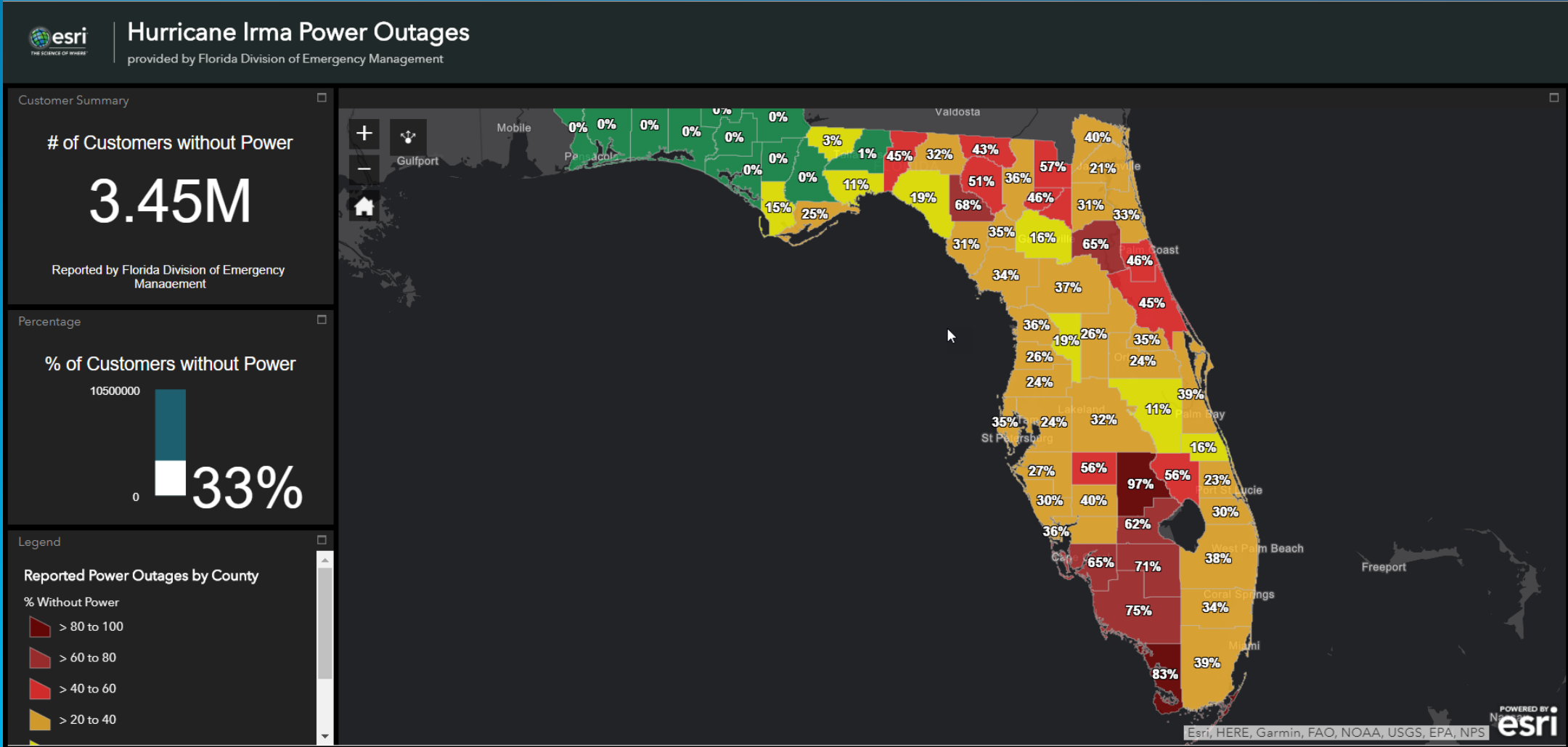
Field Mobility Resources

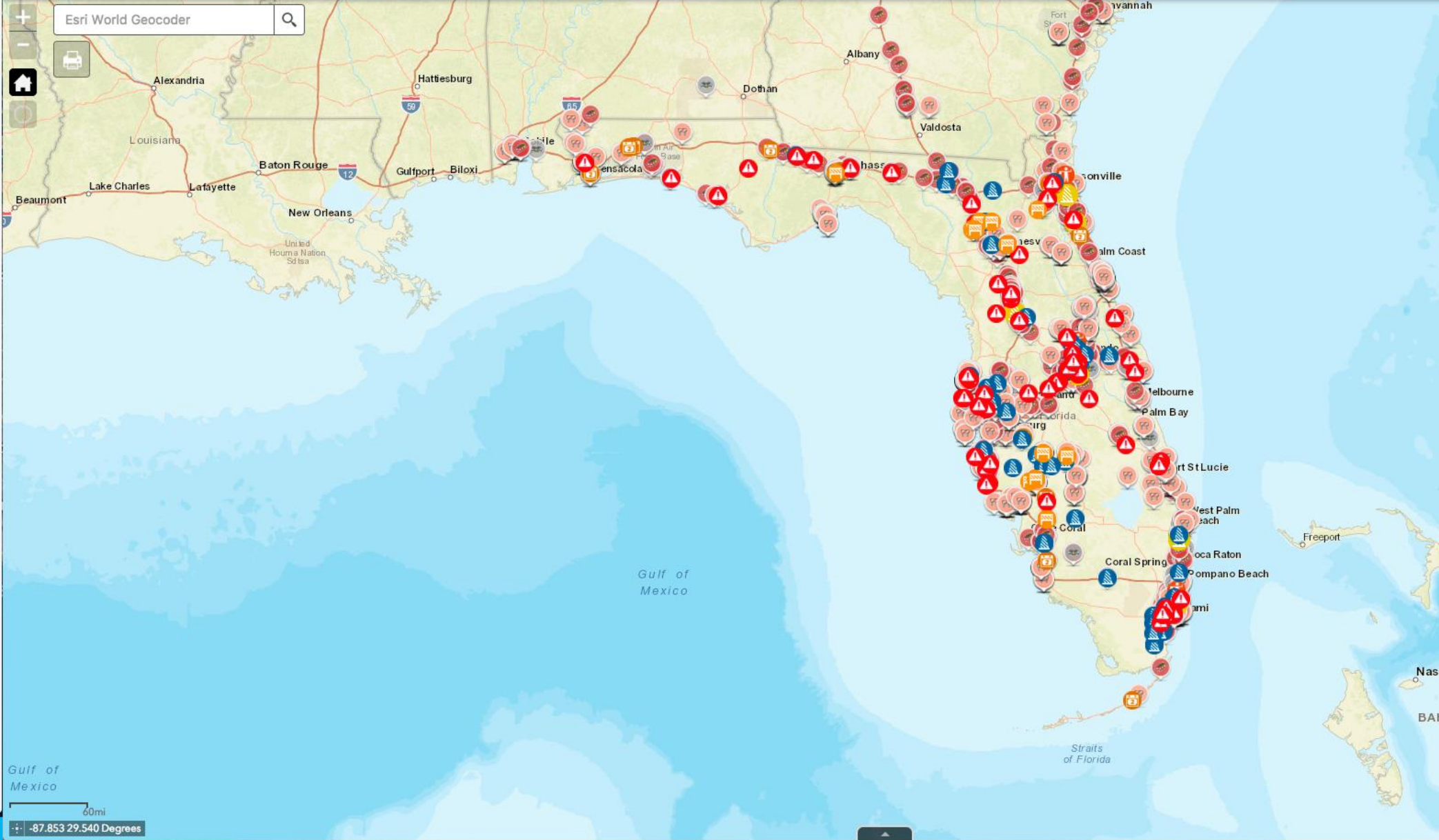
- **Damage Assessment Solution Template** - <http://solutions.arcgis.com/emergency-management/help/damage-assessment/>
- For more information on the IAFC SAR work contact Chief Jeff Dulin – jdulin@iafc.org
- FEMA's Damage Assessment Survey123 Form is available. FEMA partners interested in using the form should contact their FEMA Regional representatives. Please email FEMA-Recovery-PDA@fema.dhs.gov for more information.
- **Mobile Data Collection Update for Emergency Management Webinar** - <https://youtu.be/N1tGq8c7gpE>



Situational Awareness

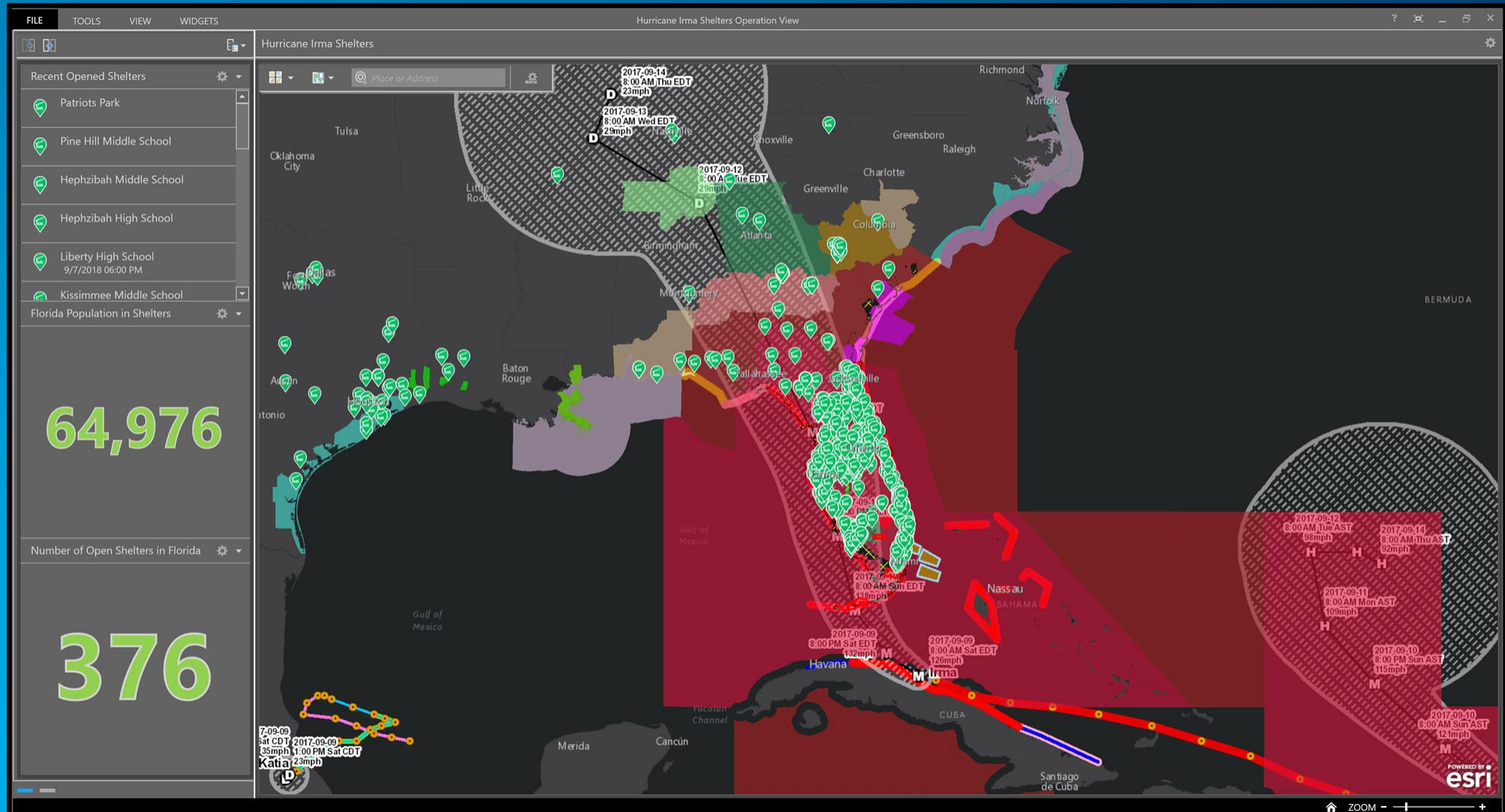
Florida Power Outage Dashboard





Traffic		
	FHP - Closures	13
	FHP - Crashes	57
	FL511 - Crashes	5
	FHP - Brush Fires	0
	FHP - Other Incidents	55
	FL511 - Other Incidents	23
	FL511 - Congestion	6
	FL511 - Planned Construction	7
	FL511 - Traffic Counters	
	WAZE Alerts	3,135
	Traffic Cameras - FL511	
	Traffic Cameras - Bay County	

Operations Dashboard – Shelter Status



Briefing Elected Officials in Texas



After witnessing first hand the horror & devastation caused by Hurricane Harvey, my heart goes out even more so to the great people of Texas!


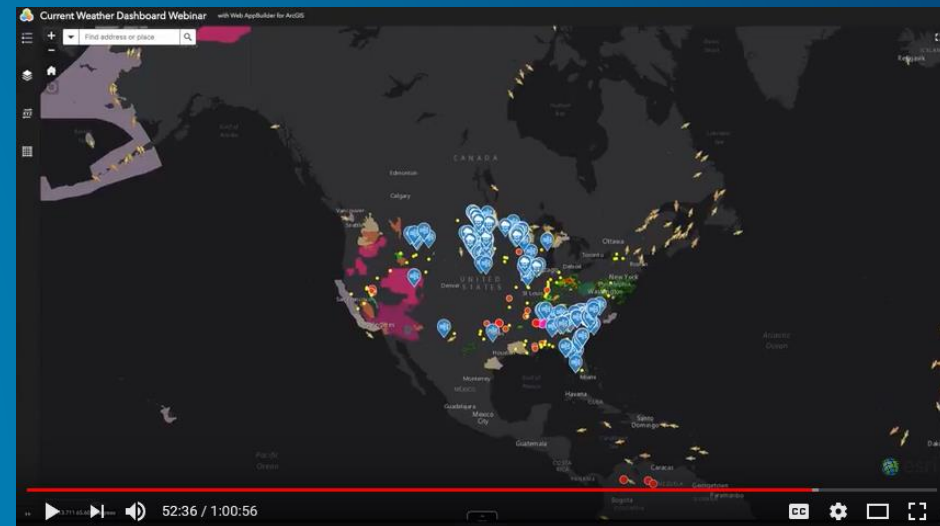
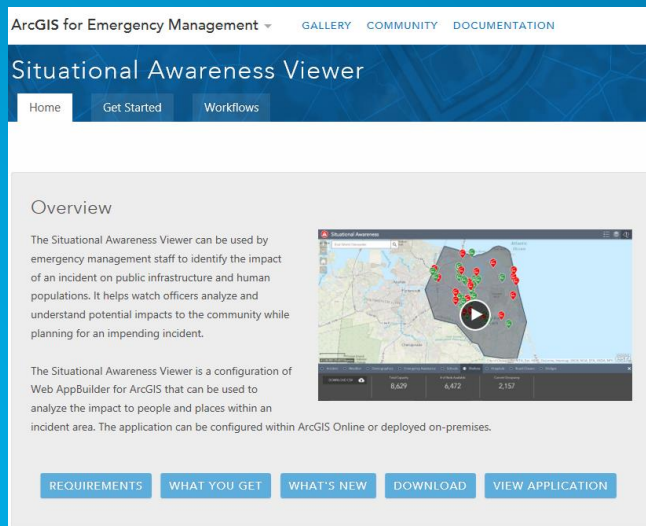
 @realDonaldTrump

Photo Credit - <https://www.instagram.com/p/BYbM0zgAc8A/>


Situational Awareness Resources

- **Situational Awareness Viewer Solution Template - <http://solutions.arcgis.com/emergency-management/help/incident-analysis-viewer/>**
- **Incident Status Dashboard - <http://solutions.arcgis.com/emergency-management/help/incident-status-dashboard/>**
- **ArcGIS Web Application Builder and Situational Awareness Viewer Update webinar - <https://youtu.be/WIHhuwAcJZc>**



Briefings

FEMA's Public Hurricane Story Map Journal

Part of the FEMA Geoplatform  FEMA

Hurricane Incident Journal

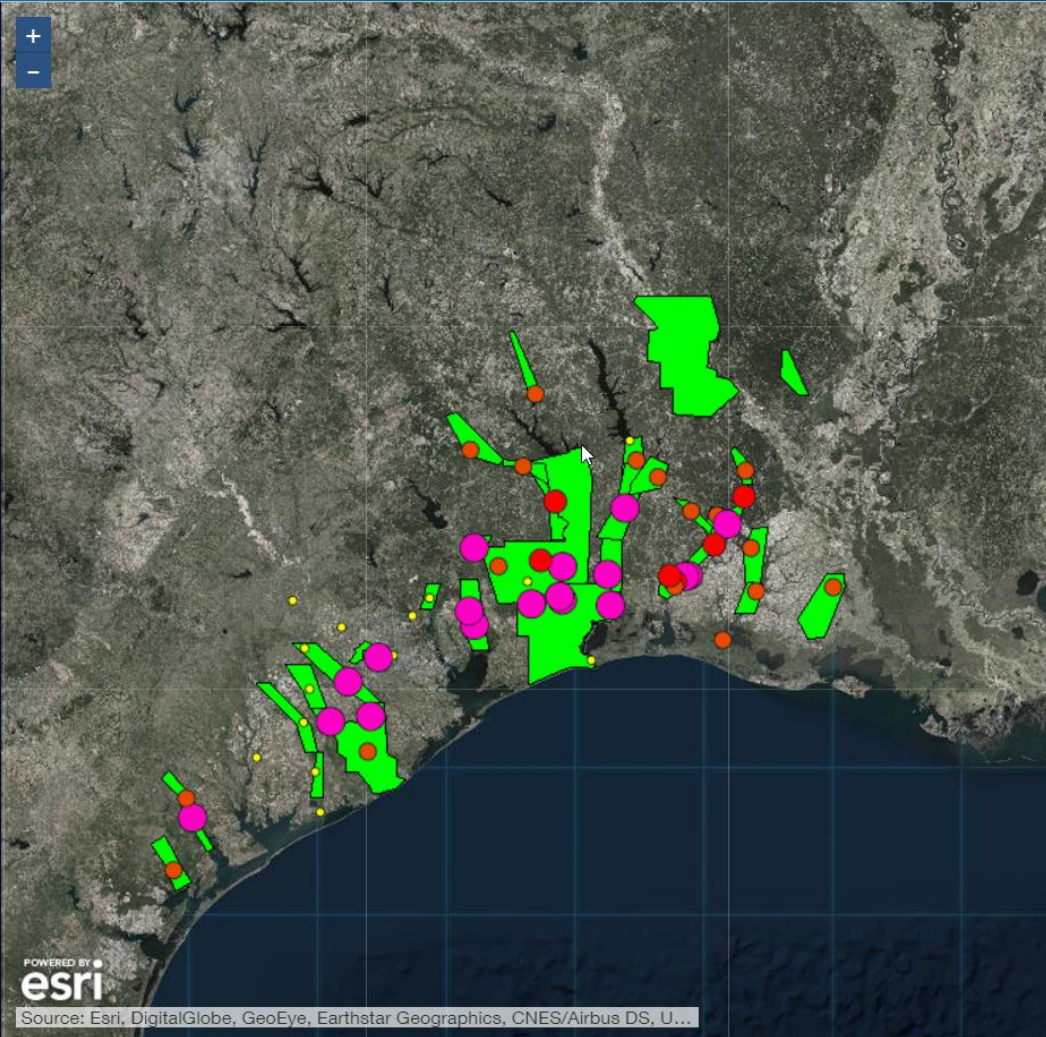
FEMA's Hurricane Incident Journal provides relevant spatial decision-making support for FEMA leadership and a view into federal information available to the general public. This website is a part of the [FEMA GeoPlatform](#).


Individual applications shown in this journal are linked to at the bottom of each section.

City of Houston is providing [311 Flooding location information](#), available to the public.

National Alliance for Public Safety GIS (NAPSG) have created a [crowdsourced image gallery](#).

[FEMA Disaster Report](#)



POWERED BY  esri

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, U...

Legend

- Live Stream Gauges
 - Major Flood
 - Moderate Flood
 - Minor Flood
 - Action Stage
- NOAA Watches and Warnings (Flood Only)
 - CurrentWarnings
 - Flash Flood Warning
 - Special Marine Warning
 - Severe Thunderstorm Warning
 - Tornado Warning
 - WatchesWarnings
 - Air Stagnation Advisory
 - Ashfall Advisory
 - Ashfall Warning
 - Beach Hazard Statement
 - Blizzard Warning
 - Blizzard Watch
 - Blowing Dust Advisory
 - Brisk Wind Advisory
 - Coastal Flood Advisory
 - Coastal Flood Warning

About this catalog

This catalog contains publicly available applications useful for Hurricane Irma response and mitigation activities. These applications are ready-to-use.

Click **Full Screen** to open in full screen mode; bookmark for later use.

Click **Details** for more information about the app and data sources.

Public Information Map (PIM)

Impact Summary

Wind Impact Summary



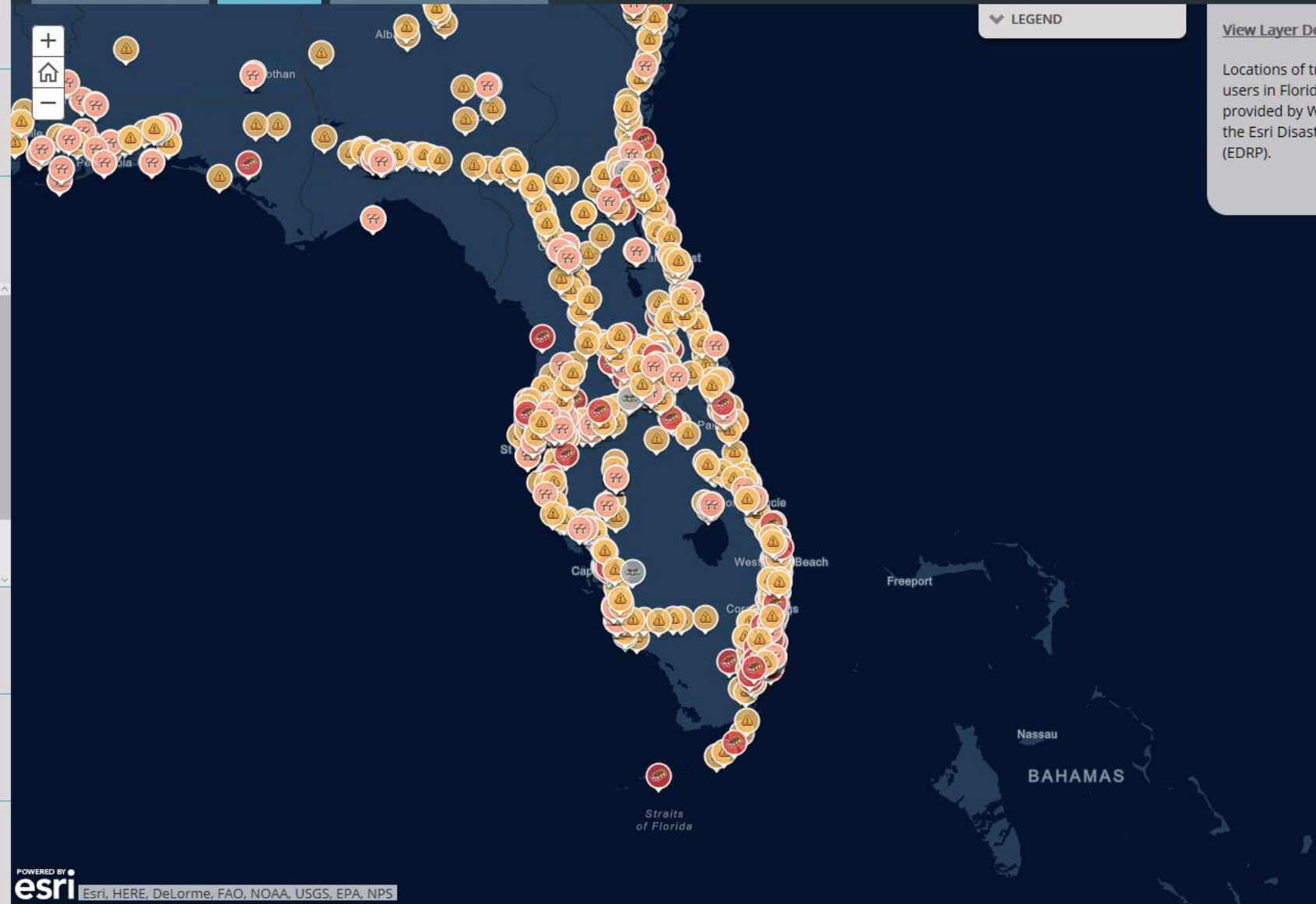
Hurricane Irma Resource Catalog

Ready-To-Use Applications

Compiled by the Esri Disaster Response Program

- About this catalog
- Power Outage
- Transportation
- Weather
- Streams
- Additional Resources

- Living Atlas Live Traffic
- Waze Alerts
- Florida 511 Live Traffic Cams



LEGEND

[View Layer Details](#)

Locations of traffic reports from Waze users in Florida. This information is provided by Waze and published via the Esri Disaster Response Program (EDRP).

[View Full Screen](#)

Layers:
[Florida 511 Real-Time Traffic Cams](#)
[Waze Alerts for Hurricane Irma](#)
[World Traffic Service](#)

To use these layers edit the URL and replace "www" with "YOUR-ORG.maps," then log in, and share into a group in your organization for further use.

[View Web Map](#)

This web map contains subscription content, and you will see an error message when opening it. Click [Sign In](#) in the upper right corner of the map to log in to your account.

Briefing Resources

- **Incident Briefing Solution Template** - <http://solutions.arcgis.com/emergency-management/help/incident-briefing/>
- **Communicating More Effectively with Story Map Journal Webinar** - https://video.esri.com/iframe/4912/000000/width/960/0/00_00:00

ArcGIS for Emergency Management | GALLERY | COMMUNITY | DOCUMENTATION

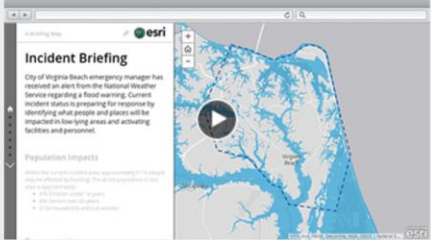
Incident Briefing

Home | Get Started

Overview

The Incident Briefing application can be used by emergency management staff to provide map-based briefings and reports during an incident.

Incident Briefing is a configuration of ArcGIS Online and the Story Map Journal configurable application template that can be deployed by emergency management organizations and used by response personnel on desktop computers, smartphones, and tablet devices.



[REQUIREMENTS](#) | [WHAT'S NEW](#) | [VIEW APPLICATION](#)

A story map

Daily Situational Awareness Briefing

Monitor hot spots, weather conditions, and topographic features in real time and weather data. Each of these layers provides insight into where a fire is located, its intensity, and the surrounding areas susceptible to wildfire.

The source web map is available here:
<http://disasterresponse.maps.arcgis.com/home/item.html?id=d88bc1943694842869139e9907a11c13>

US Flooding

Continuously updated US flooding information from the National Weather Service shows observed flooding locations, current & forecast precipitation, and flood warning areas. The stream gauges and weather watches layers allow you to identify features to get specific information such as flooding height, weather related issue, and severity.

The source web map is available here -
<http://disasterresponse.maps.arcgis.com/home/item.html?id=6ed3da579db4c092891aba611ead5648>

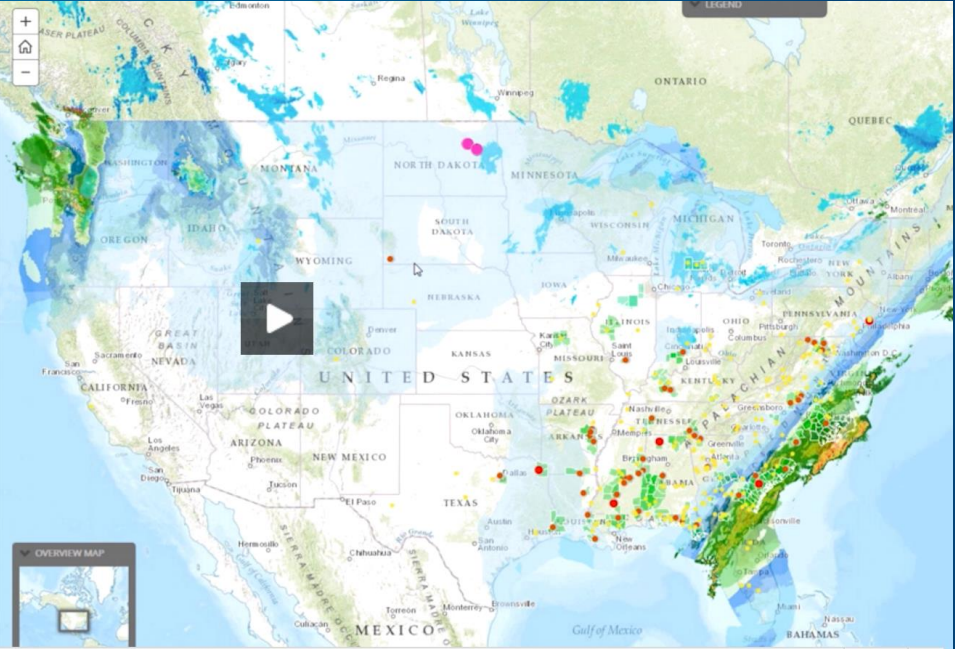
Earthquakes

This is a continuously updated map of earthquake data for the last 90 days with a magnitude 2.5 or greater. Zoom in to view the shake intensity around significant earthquakes.

The source web map is available here:
<http://disasterresponse.maps.arcgis.com/home/item.html?id=7d796736a671464070805a3d825a094220>

US Snowfall Forecast

This map contains snowfall predictions from for the United States as indicated by the legend.



09:30 | 58:08

Public Information

Know your Zone

Virginia Hurricane Evacuation Zone Lookup Tool
Virginia Department of Emergency Management | National Hurricane Center | What do the Zones Mean?

Find address or place

About

What are the zones?
Evacuation zones designated A through D are in place across coastal Virginia. In the event of a storm or other emergency, residents of one or more zones may be directed to evacuate depending on tides, storm intensity, path, and other factors.

How will the zones be used?
All you have to do is Know Your Zone. When a storm is approaching, emergency managers will determine which zones are most at risk considering the intensity, path, speed, tides and other meteorological factors. Emergency managers at the state and local level will work with local media and use social media and other tools to notify residents of impacted zones what they should do to stay safe. Depending on the emergency, being safe might mean staying at home, a short trip to higher ground, or traveling to a different region of the state.

For more information, check:
<https://www.vadep.gov/hurricane-evacuation-zones-lookup/>

State Hurricane Evacuation Routes

VITA, Esri, HERE, Garmin, FAO, USGS, EPA, NPS, VA Localities, US Census Bureau, VG...

Know Your Zone
Pinellas County Emergency Management | <http://www.pinellascounty.org/emergency/>

Pinellas County is not currently under an Evacuation Order

Search an address or Mobile Home

Search Address or Mobile Home

Show results within 5 Miles

1 15

To adjust the number of Special Needs Shelters, Shelters, and Accommodations change the slider. The smaller the buffer distance the less results. The larger the buffer distance the more results will be returned.

Legend:
S Hurricane Shelter
A Special Needs Shelter
B
C
D
E Non Evac

Powered by esri

MIAMI-DADE COUNTY
Storm Surge Planning Zone

Find address or place

Legend

-80.213 25.584 Degrees

Hurricane Evacuation Zones
Get A Plan! | Disaster Preparedness Maps | Evacuation Routes | Contact

Find address or place

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CAL FIRE Structure Status Information Public Information Map

Sonoma County - Structure Status Information

About Legend

Sonoma County - Structure Status Information

Damage assessment is ongoing. If a structure point does not appear on the map it may still have been impacted by the fires. Zoom in using the Bookmarks listed below and the zoom buttons on the map. Specific addresses can be searched for in the search bar.

For more information about the wildfire response efforts visit the CAL FIRE [incident page](#).

For additional information visit:
[County of Sonoma Emergency Operations](#)
[City of Santa Rosa Emergency Operations](#)
[City of Sonoma Emergency Operations](#)

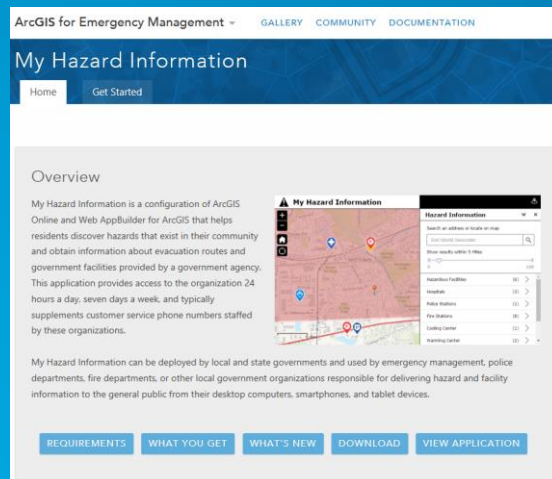
Bookmarks

- Sonoma County
- Pocket Fire
- Tubbs Fire
- Coffey Park
- Fountaingrove
- Larkfield / Wikiup
- Sonoma Valley

Map features: Zoom (+, -), Home, Search, Legend, Topographic map inset, Earthstar Geographics, CNES/Airbus DS | Esri, HERE, Garmin, esri logo.

Public Information Resources

- **My Hazard Information Solution Template** - <http://solutions.arcgis.com/emergency-management/help/my-hazard-info/>
- **Best Practices for Sharing Information with the Public Webinar**
<https://youtu.be/xPBJ8j5cwrE>



Debris Reporting

Debris Reporting

<http://solutions.arcgis.com/emergency-management/help/debris-reporting/>

Home ▾ Debris Reports for Last Pass Modify Map Sign In

Details | Basemap | Print ▾ | Measure | Find address or place

About | Content | Legend

Legend

Debris Reports for Last Pass

- Appliances (White Goods)
- Construction and Demolition
- Hazardous Waste
- Mixed
- Other
- Sediment (Soil, Mud, Sand)
- Vegetation
- Vehicles
- Vessels

DebrisReports:

Report ID	Sf
Type of Debris	Vessels
Details	Boat ashore
Date Submitted	10/17/2017, 12:49 PM
Status	Submitted

Attachments:
Photo1.jpg
Photo2.jpg

Edited by sfraser_CityofKeywest on 10/19/17 at 1:28 PM
Zoom to

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Web GIS Enables Modern Emergency Response



Collect and Connect
With Your Data



Enable & Manage
Your Mobile
Workforce



Pick the Apps for
your Workflow



Configure Mission-
Critical Apps



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