



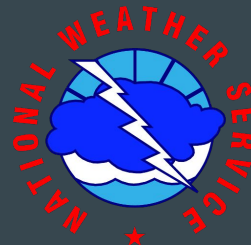
Hurricane Michael: ...

Surveying the Damage

Parks Camp

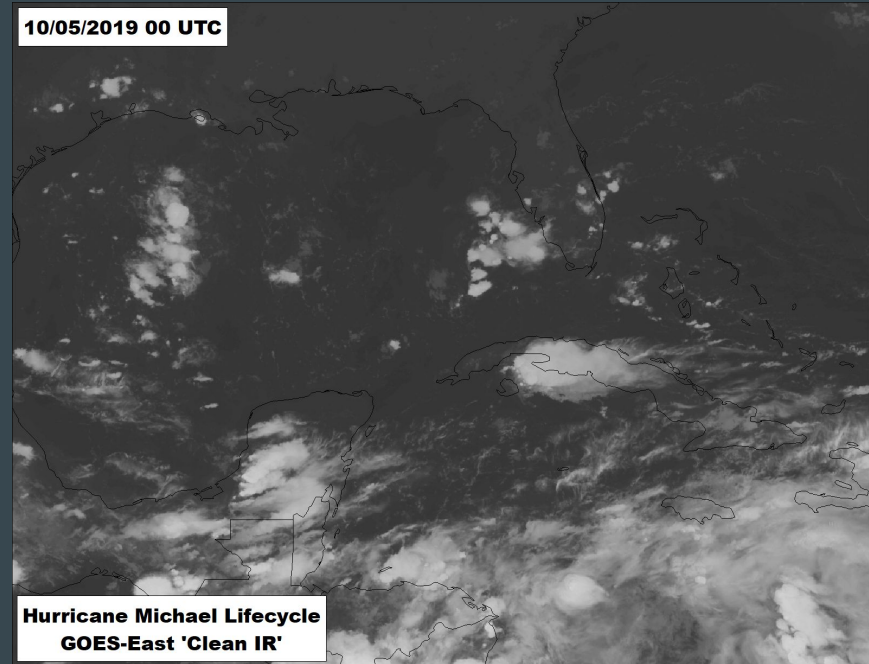
Science and Operations Officer

NWS Tallahassee



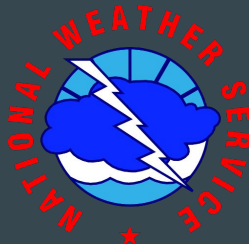
Hurricane Michael

- 1st category 4 or 5 hurricane on record to make landfall in the Florida Panhandle
- 3rd strongest hurricane at U.S. landfall based on pressure (behind 1935 unnamed FL Keys hurricane and Camille 1969)
- 4th strongest hurricane at U.S. landfall based on wind behind the 1935 unnamed FL Keys hurricane, Camille (1969) and Andrew (1992)



Post-Event Responsibilities

- NWS Directive 10-1604: NWS charged with collecting highly perishable data following extreme hydrometeorological events.
- Michael
 - Wind Damage
 - Storm Surge
 - High Water Marks
 - Damage
 - Cooperative effort with USGS and NOAA CO-OPS



Damage Assessment Toolkit (DAT)

- NWS Tool for collecting post-storm data in the field
- Framework built on central GIS Server
 - Mobile app used to collect field data
 - Quality controlled via Web Interface
 - Available internally/externally via web and GIS services
- Designed primarily for collecting data following tornadoes and severe thunderstorms
- End Users (Severe and Tropical events)
 - State and local agencies
 - FEMA
 - Insurance/Reinsurance
 - Research

The screenshot displays the DAT mobile application interface. At the top, a dark header bar contains navigation and location data: a 'Back' button, current coordinates (Lat: 30.4462, Lon: -84.2999), accuracy (65.0), a green 'GPS' indicator, and a 'Menu' button. Below the header, the main form area includes a 'Take Picture' button, an 'Event ID' text input field, and a 'Storm Date (UTC)' section with date and time pickers set to 5/16/2019 and 00:00. The 'DI' (Damage Index) is set to 'One- or Two-Family Residences (FR12)', and the 'DoD' (Degree of Damage) is 'Large sections of roof structure removed; most walls remain standing'. The 'Windspeed(mph)' is shown on a slider at 122. The 'EF Rating' is set to 'EF2', and the 'Direction' is 'N/A'. At the bottom, an orange status bar shows 'Status(Online)[TEST]:' and 'Cache: (0)'.

Field	Value
Lat	30.4462
Lon	-84.2999
Accuracy	65.0
GPS	Active
Menu	Available
Take Picture	Button
Event ID	Text Input
Storm Date (UTC)	5/16/2019 00:00
DI	One- or Two-Family Residences (FR12)
DoD	Large sections of roof structure removed; most walls remain standing
Windspeed(mph)	122
EF Rating	EF2
Direction	N/A
Status(Online)[TEST]:	Cache: (0)

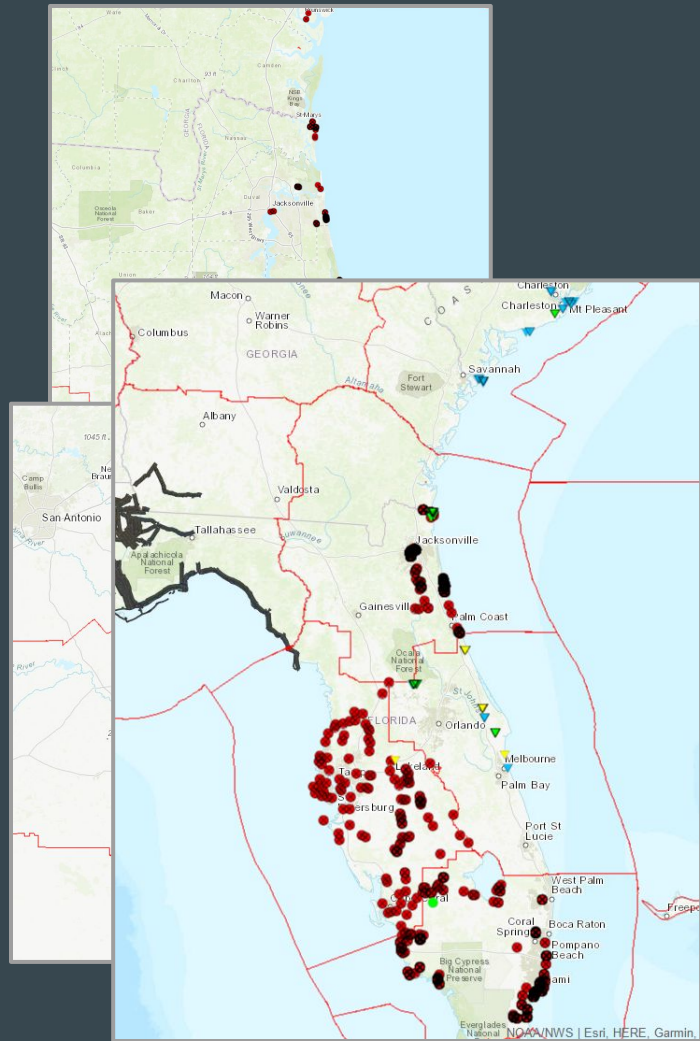
Damage Assessment Toolkit (DAT)

- Interface has EF-Scale Criteria built in
 - Outputs an estimated wind speed corresponding to damage
- EF-Scale not applicable to tropical wind damage
 - Different time scales
 - Tornadoes characterized by strong upward vertical motions
- Surge/Flooding not currently natively supported



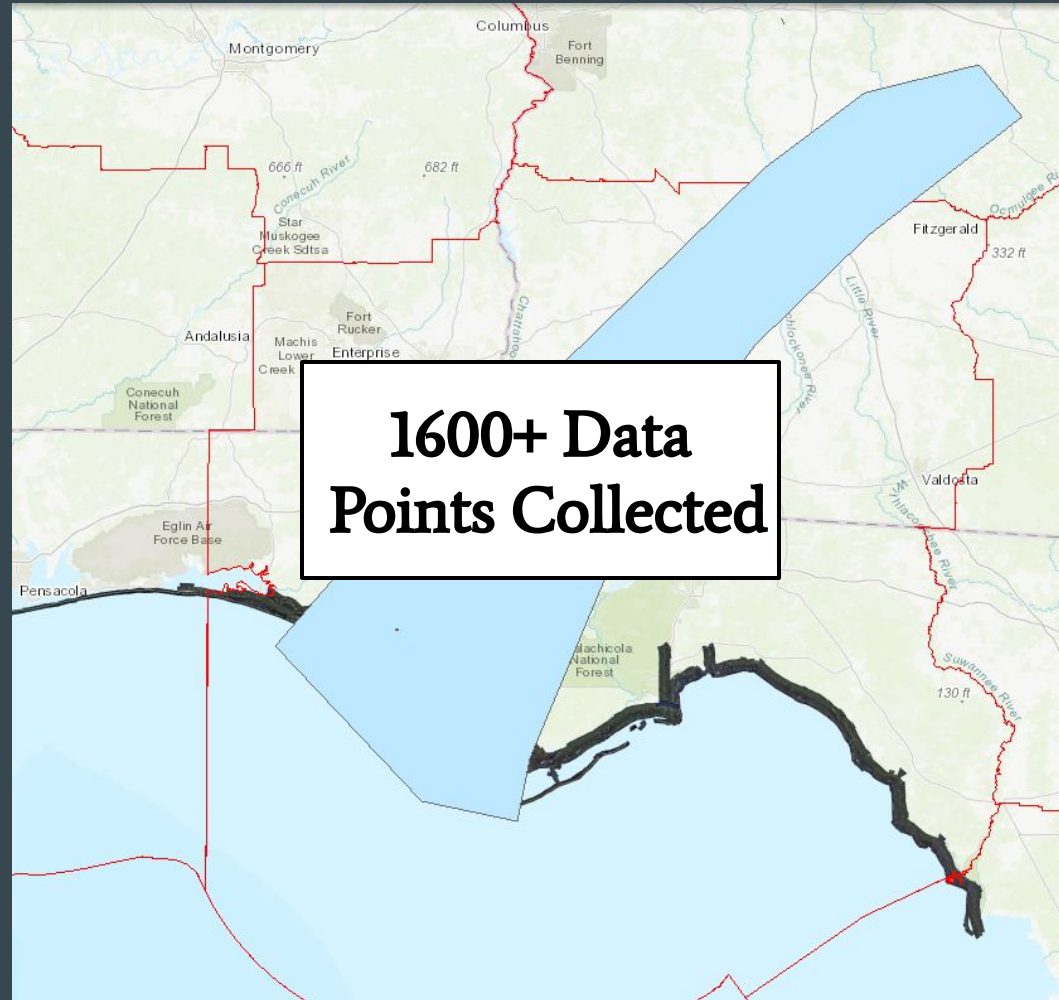
Damage Assessment Toolkit (DAT)

- Initial tropical use in Hurricanes Matthew, Harvey, and Irma to collect surge, tropical wind, and tornado damage information
- Inconsistent application
- Michael Wind Data
 - Categorize wind damage with EF criteria
 - Set EF-Rating to 'TSTM/Wind'
 - Set Wind Speed to 'Missing'
- Michael Surge Data
 - Set EF-Rating Field to 'UNKNOWN'
 - Entered high water mark information into Comment field



Data Collection

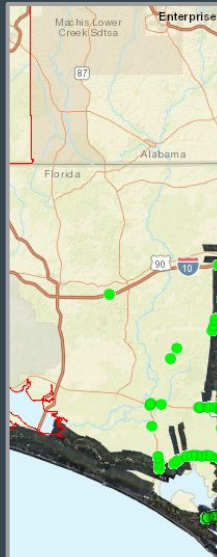
- Multiple NWS offices
 - Tampa - deployed to Tallahassee
 - Houston - deployed to Tallahassee
 - Jacksonville
 - Atlanta
 - Mobile
- Outside agencies/partners
 - Harris County (TX) Flood Control District - deployed to Tallahassee
 - USGS - Surge
 - NOAA CO-OPS - Surge



Surveys took place over 7 days



Mexi



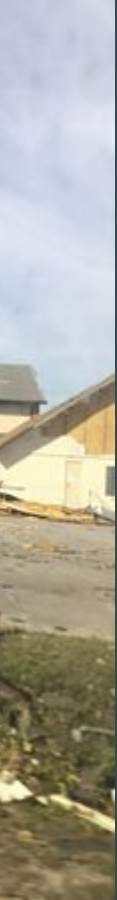
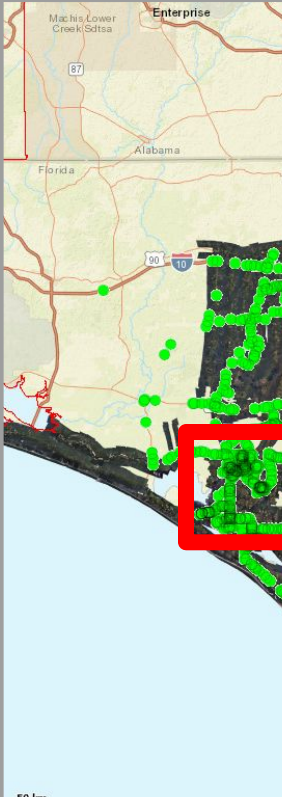
50 km
40 mi

Google

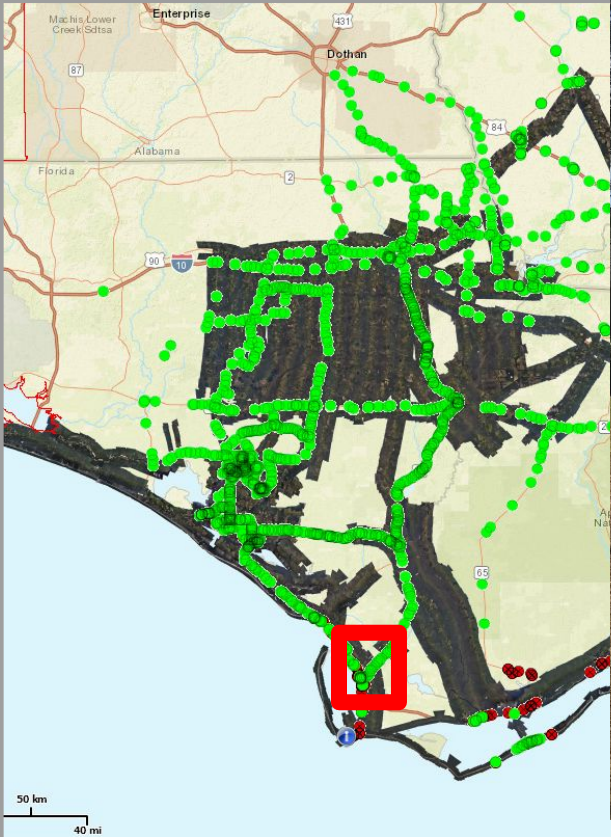
Image capture: May 2011 © 2010 Google United States Terms Report a problem

NOAA/NWS Lead HERE Coming

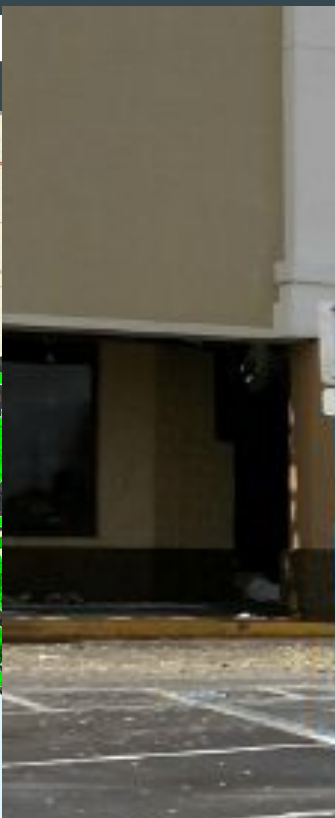
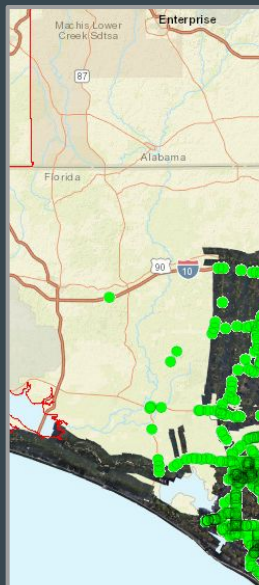
Panama City Area



Port St. Joe

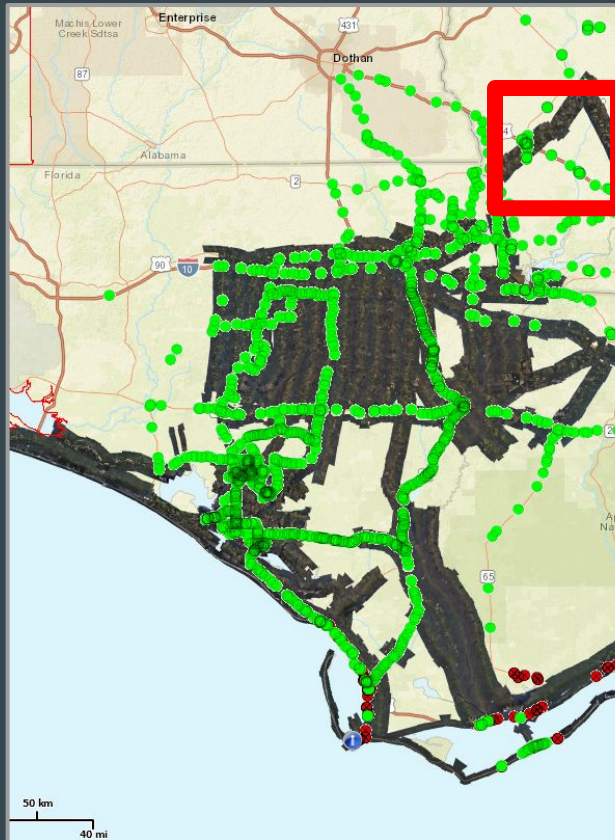


Maria

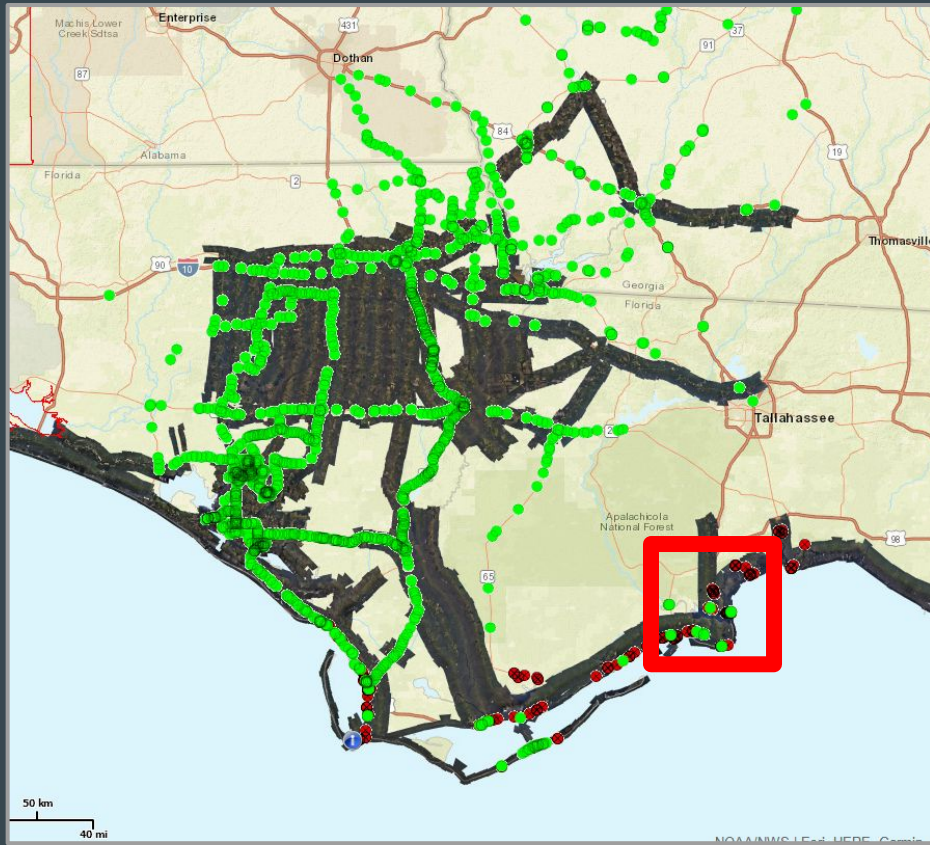


50 km
40 mi

Southwest Georgia



Big Bend



Best Practices

- Used DAT to plan surveys and coordinate with various survey teams
- Waited several days before surveying in most heavily impacted areas
- Utilizing personnel from as many sources as possible (both internal and external)
- Bringing in surge expertise

Lessons Learned

- DAT needs tropical and flood specific capabilities
- Measuring storm surge presents different challenges than freshwater flooding
- Need to improve collaboration between NWS, USGS, and NOAA CO-OPS line offices for surge data collection

Future Plans for DAT

- Updated mobile apps and web interface
- Incorporate tropical wind and flooding (including storm surge)

10:49

TAE

Take Photo

Storm Date: 5/19/2019 14:48 UTC Now

Event ID:

DI: One- or Two-Family Residences (FR12)

Uplift of roof deck and loss of significant roof covering material (>20%); collapse of chimney; garage doors collapse inward; failure of porch or carport

-99

Tropical Wind

Inj. 0

Status (Test) : Cache: 0

Settings Map Form

10:49

TAE

Take Photo

Storm Date: 5/19/2019 14:48 UTC Now

Event ID:

Flood Type: Storm Surge

Point Type: Damage Point

Damage Category: Minor

Inj. 0

Done

N/A
None
Affected
Minor
Major
Destroyed

Status (Test) : Cache: 0

Settings Map Form

10:50

TAE

Take Photo

Storm Date: 5/19/2019 14:48 UTC Now

Event ID:

Flood Type: Storm Surge

Point Type: High Water Mark

Water Level (ft): 2.2 Datum: AGL

HWM Type: Still Quality: Good

Inj. 0

Comments:

Status (Test) : Cache: 0

Settings Map Form

Data Access

ArcGIS REST Services Directory

[Home](#) > [services](#) > [nws_damageassessmenttoolkit](#)

JSON | 2024

Folder: nws_damageassessmenttoolkit

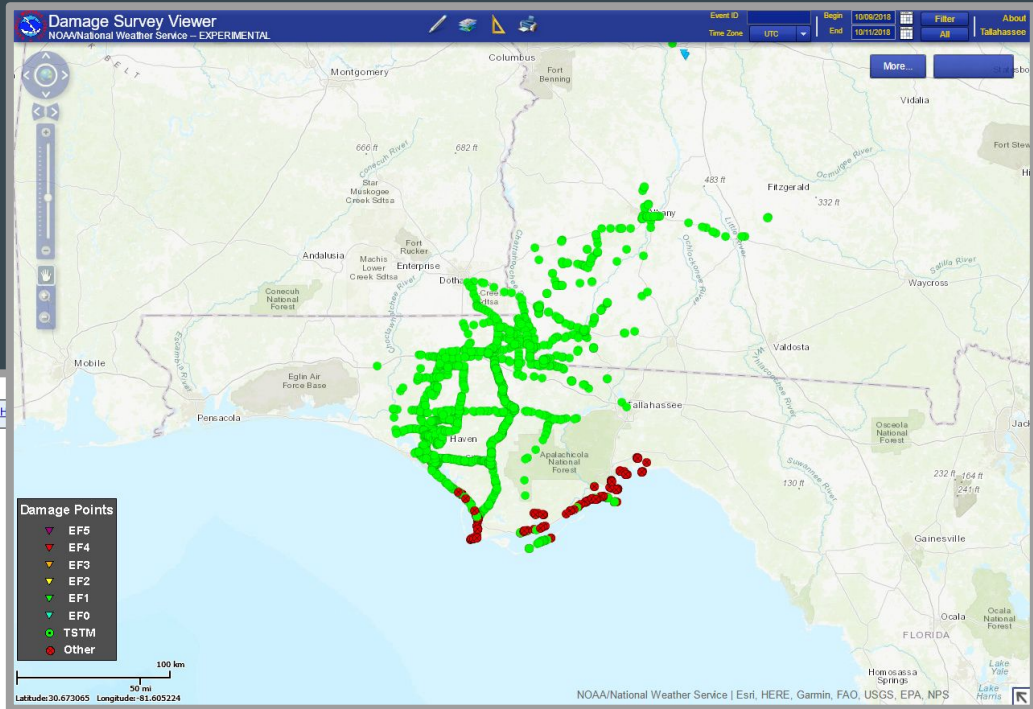
Current Version: 10.61

View Footprints In: [ArcGIS Online Map Viewer](#)

Services:

- [nws_damageassessmenttoolkit/CWA](#) (MapServer)
- [nws_damageassessmenttoolkit/DamageViewer](#) (FeatureServer)
- [nws_damageassessmenttoolkit/DamageViewer](#) (MapServer)
- [nws_damageassessmenttoolkit/StormDamageToolsPublic](#) (GPSServer)
- [nws_damageassessmenttoolkit/TestToolbox](#) (GPSServer)

Supported Interfaces: [REST](#) [SOAP](#) [Sitemap](#) [Geo Sitemap](#)



● Web Viewer

- <https://apps.dat.noaa.gov/StormDamage/DamageViewer>

● GIS Services

- https://services.dat.noaa.gov/arcgis/rest/services/nws_damageassessmenttoolkit

Questions???

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