

Employing a Geographic Information System (GIS) for Emergency Management – A User's View



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Office of Public Health Preparedness and Response

Agenda

- q Overview of the Federal Select Agent Program (FSAP)
- q Use of GIS to Support the FSAP
- q Examples/Scenarios
- q Icon Development
- q Results/Lessons Learned

Disclaimer: The Icon's on the map are for training and do not represent FSAP regulated facilities or entities

Federal Select Agent Program (FSAP)

- q The Federal Select Agent Program oversees the possession, use and transfer of biological select agents and toxins, which have the potential to pose a severe threat to public health and safety, animal or plant health or to animal or plant products.**
- q Requires facilities to have an Incident Response Plan (IRP) that covers natural hazards and complies with the select agent regulations.**
- q Offers assistance to the regulated community in response to natural disasters.**

Facilities

- q **350+ facilities in all 50 states; most without a dedicated emergency manager**
- q **Variety of designs**
 - § Military bases; one story buildings
 - § Universities; pharmaceutical companies
 - § New; old facilities
 - § Purpose build; retrofit
- q **Variety of work**
 - § Vaccines + Therapeutics
 - § Diagnostics
 - § Commercial



Use of GIS to Support the FSAP

q Software and data

§ Free GIS software

§ Purpose built icons for our facilities

§ Free GIS data feeds (100+) for "all hazards"

- National Weather Service storm reports
- National Hurricane Center hurricanes data
- United States Forrest Service
- United States Geological Service
- 4 State systems
- "Street level Resolution"

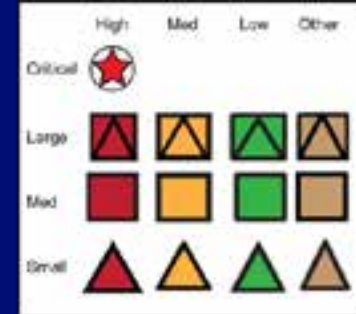
q 1 person monitors

q Teams formed to respond

All Hazards, All Facilities, 1 person, 1 Common Display!

Use of Icons

- q Icons can be built to support your specific need.
- q Direct import of an excel spreadsheet to incorporate information. It includes:
 - § Approximate Facility Location
 - § Facility Identifier
 - § Risk Tier
 - § Biosafety Containment Level



Enables '1 click' assessment and coordination

Use of GIS to Support the FSAP



GIS based Assessments

- Hurricane evacuation zones
- Storm surge
- Flood plains
- Earthquake risk maps
- Wildfire perimeters

Non-GIS

- Review facility IRP

GIS Data

- Severe weather forecasts
- 'Live' earthquakes
- Earthquakes shake maps and damage reports
- Hurricane data
- Storm surge models
- Fire hotspots
- Local storm reports
- Flood gauge data
- Snowfall and ice models
- Satellite storm and smoke data
- etc.

GIS Data

- Map query of affected facilities

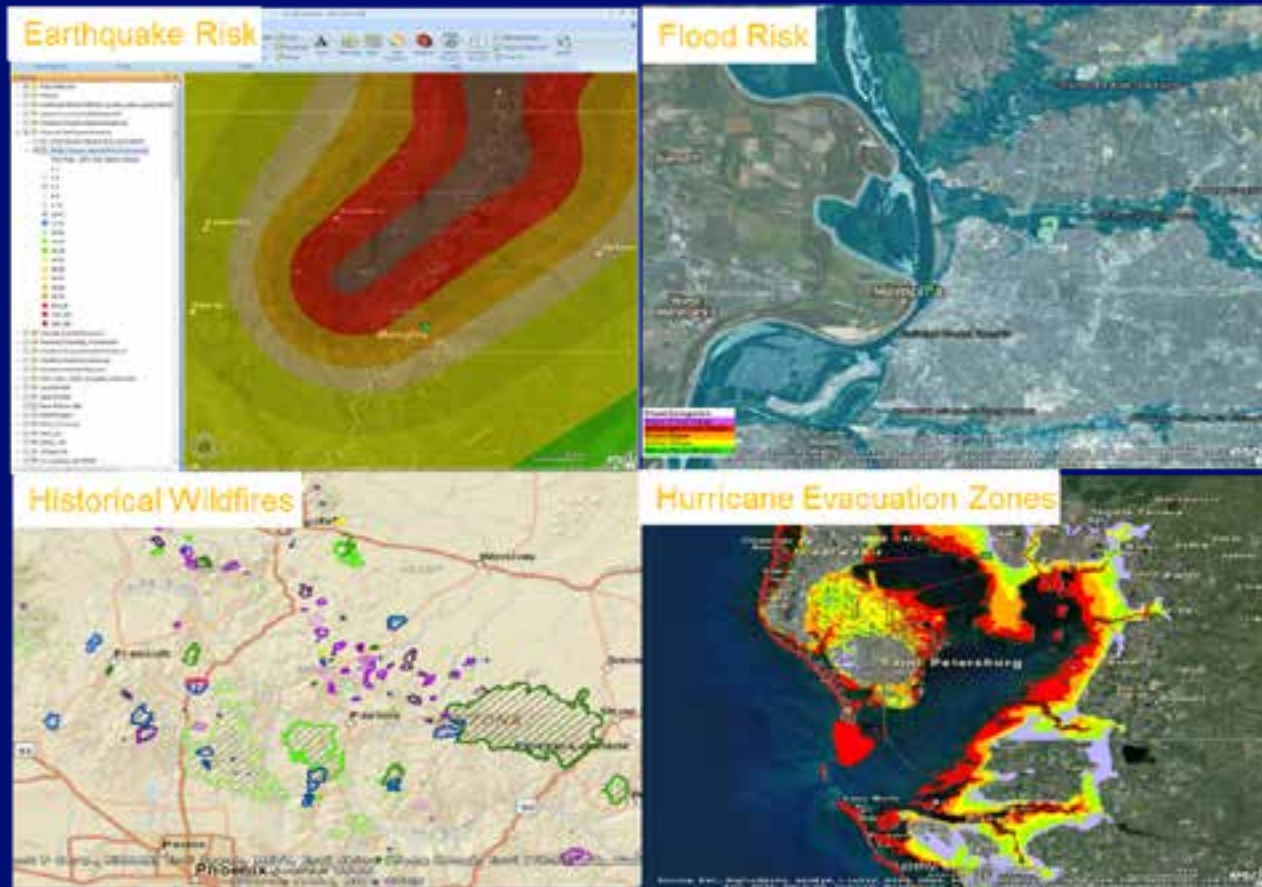
Non-GIS

- Contact facility
- Check facility website
- Check local news
- Check power outages
- Check with partner agencies

GIS Data

- Review damage reports
- Support Transfer

Example Assessment

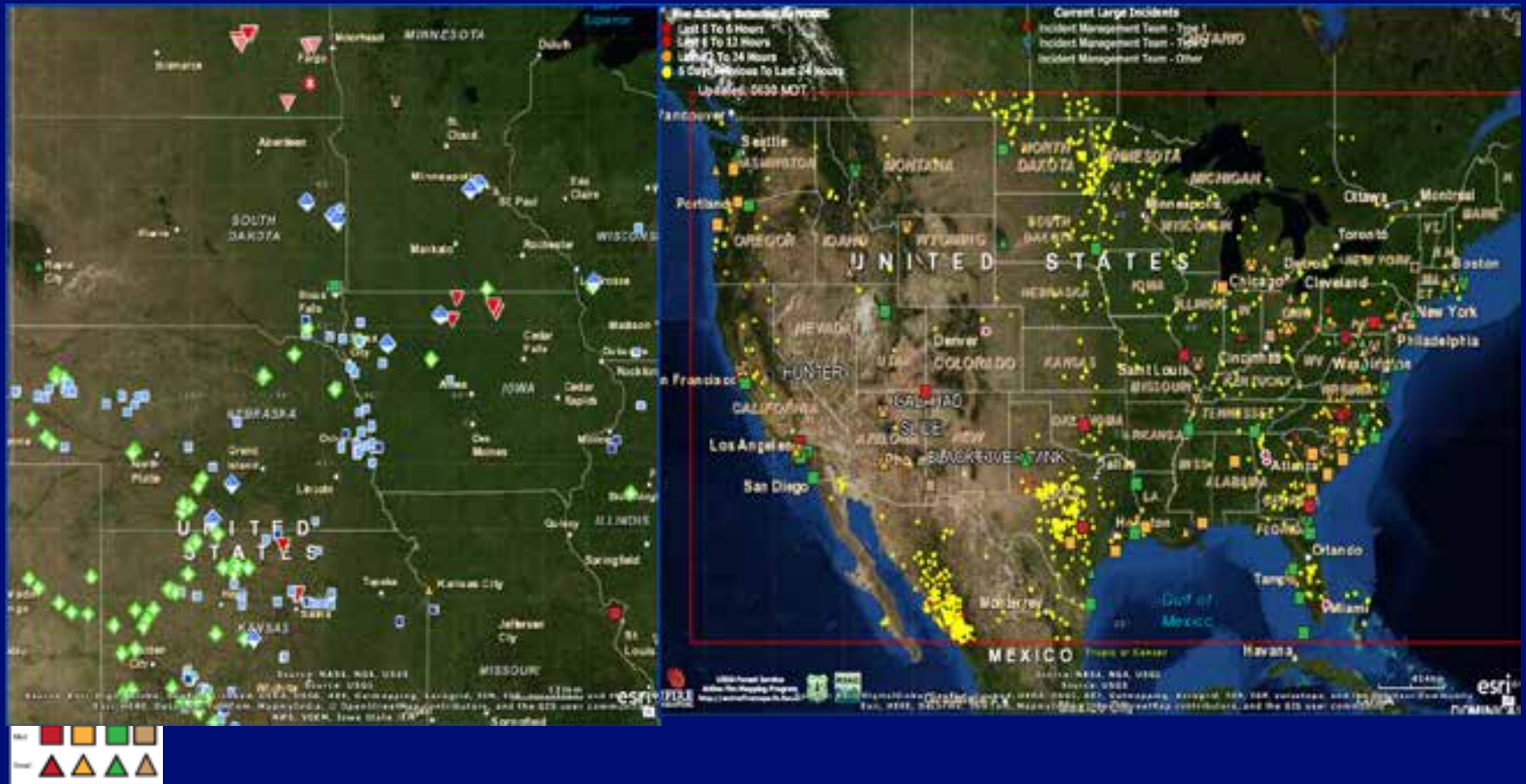


FSAP Watch Map



*Severe Weather + Earthquakes + Hurricanes
Constantly Monitored*

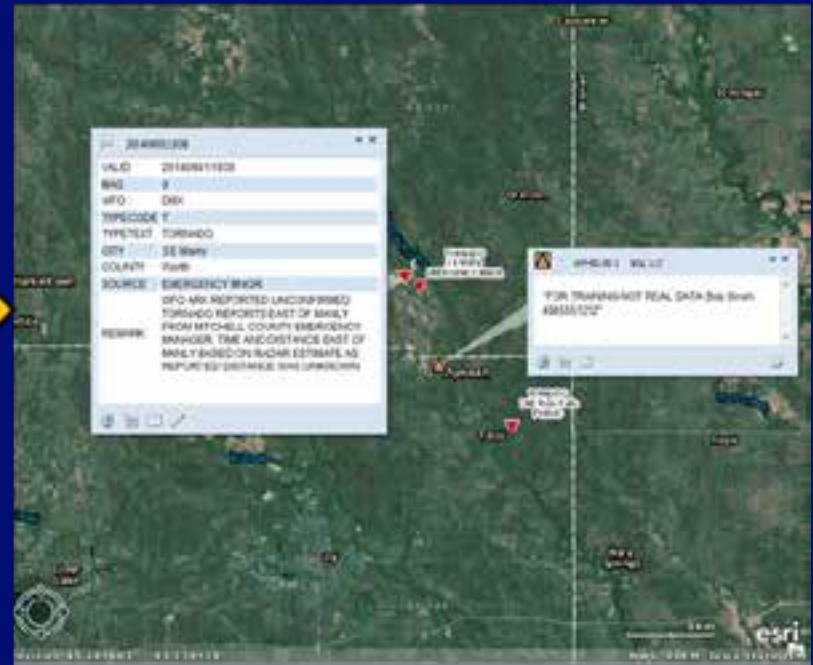
FSAP Watch Map (1x a day or as required)



Example Storm Damage



Zoom

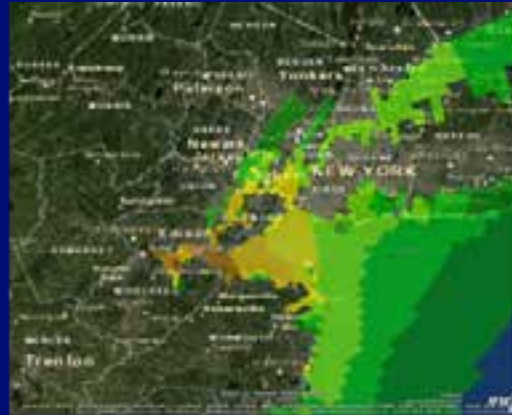


Example Hurricane

Cone



Storm Surge



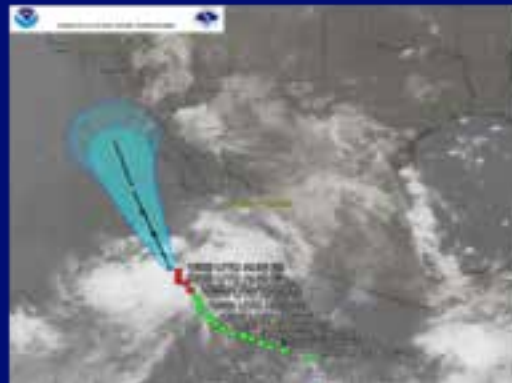
Models



Wind Swath



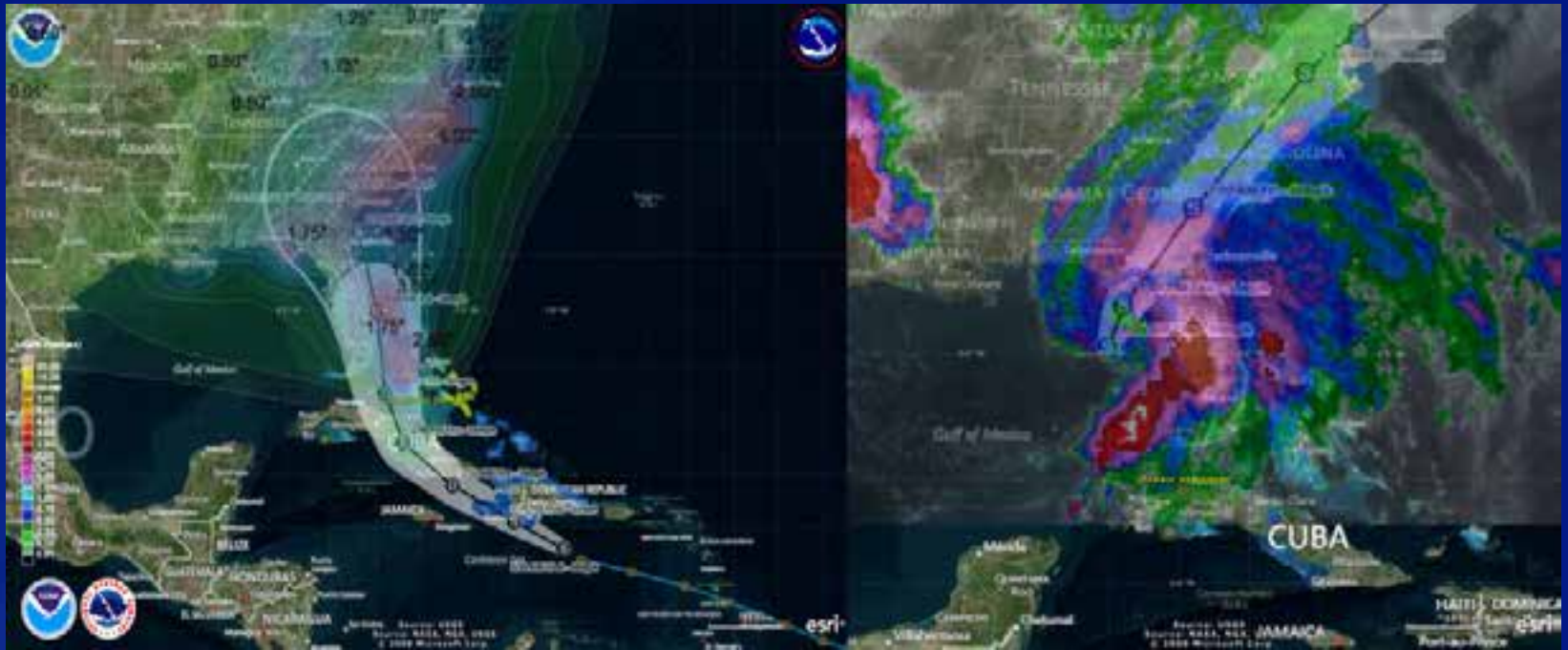
Size



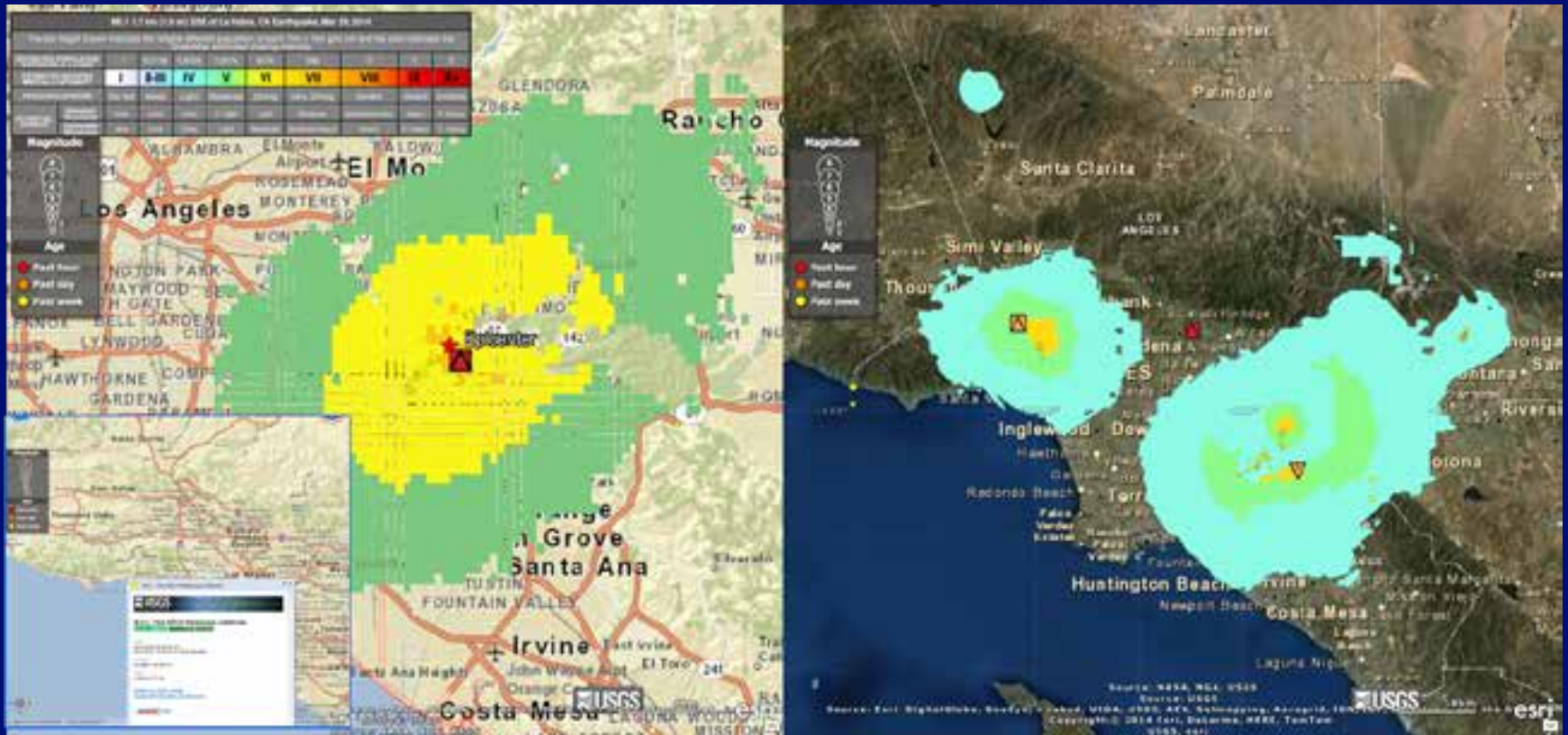
Rain



Hurricane "Mash Up"

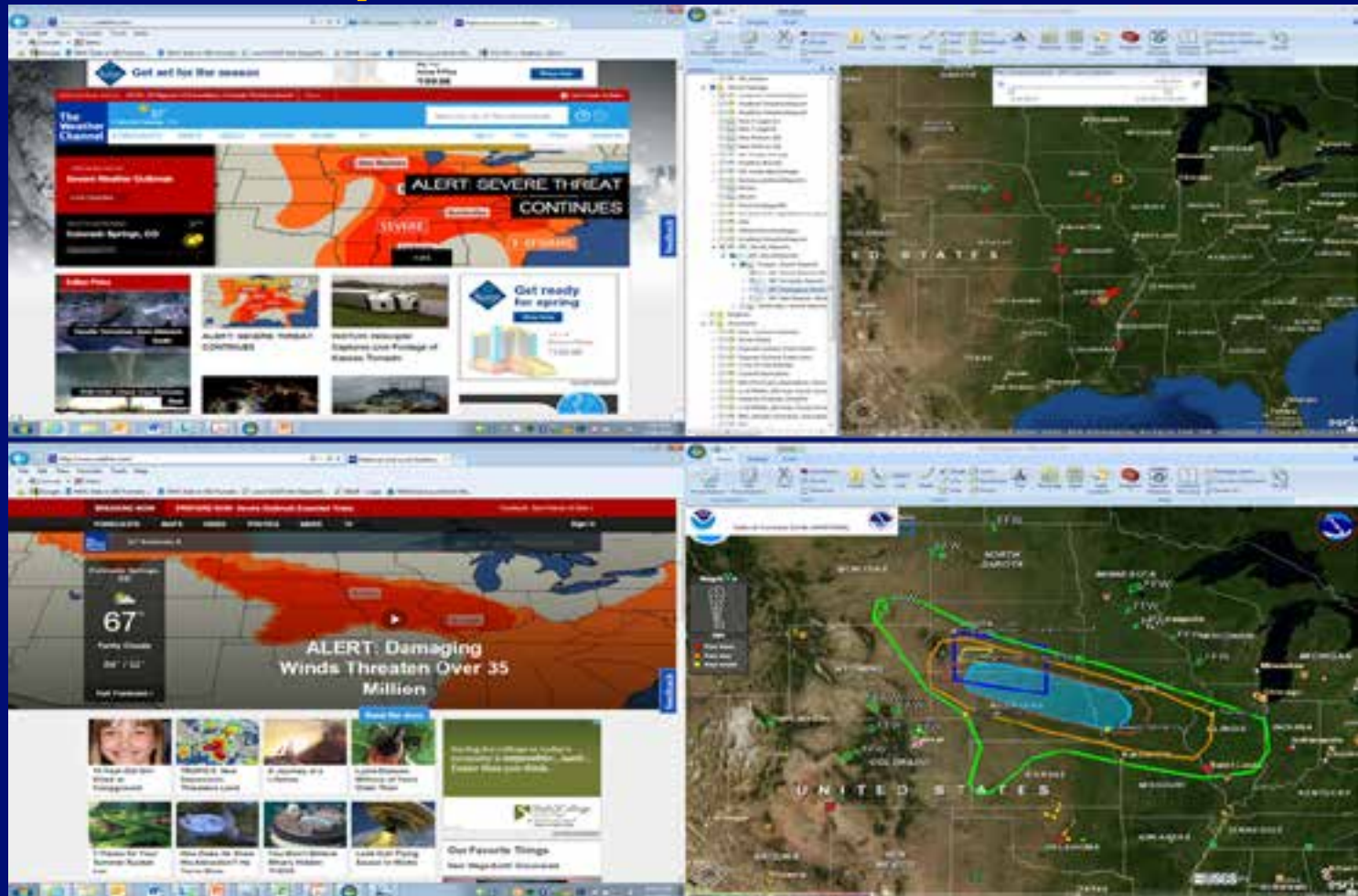


Example Earthquake

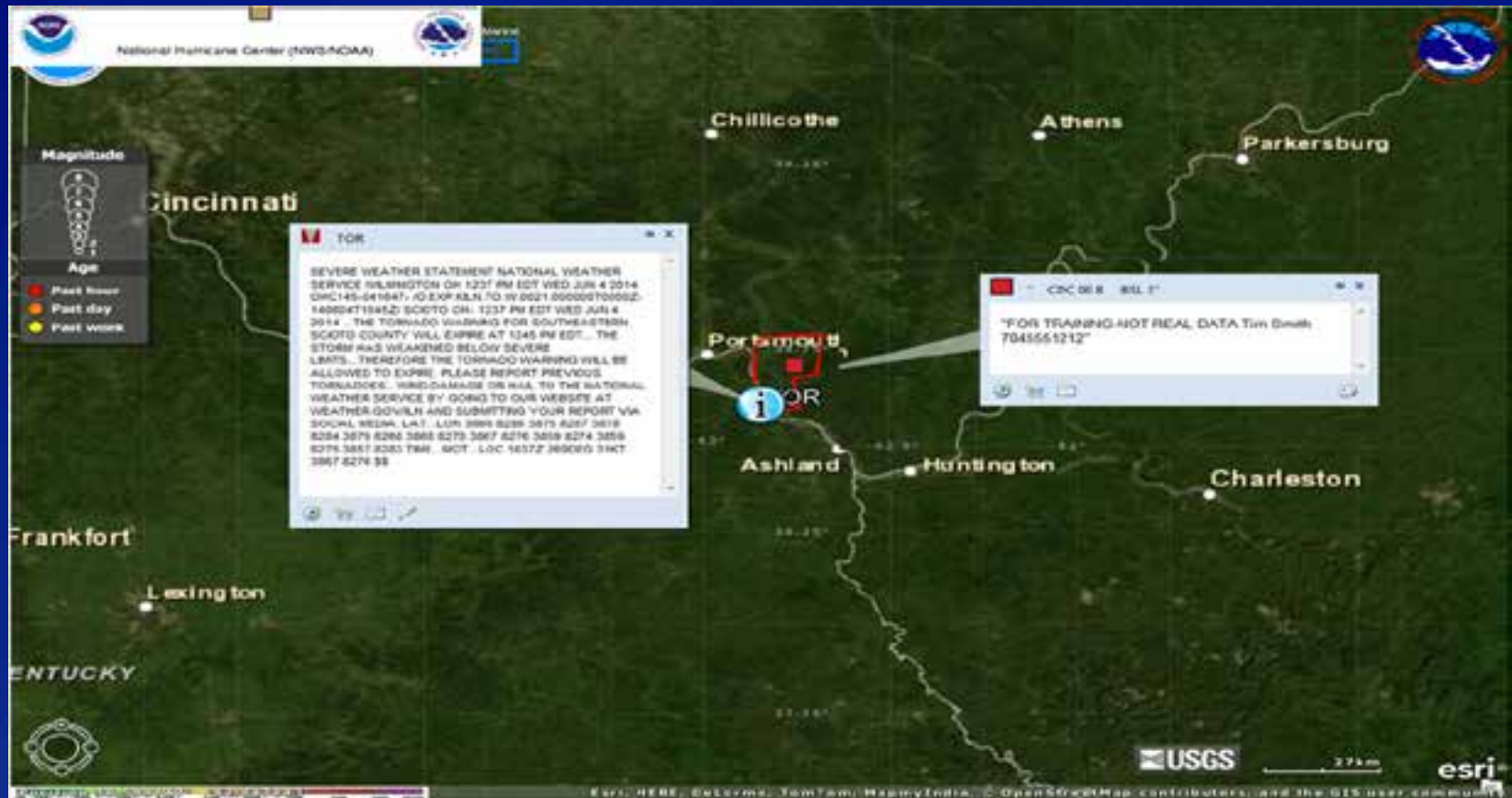


**Before GIS: 6.0 or higher earthquake.
After GIS: Modelled Damage estimates.**

Example Tornado/Severe Weather

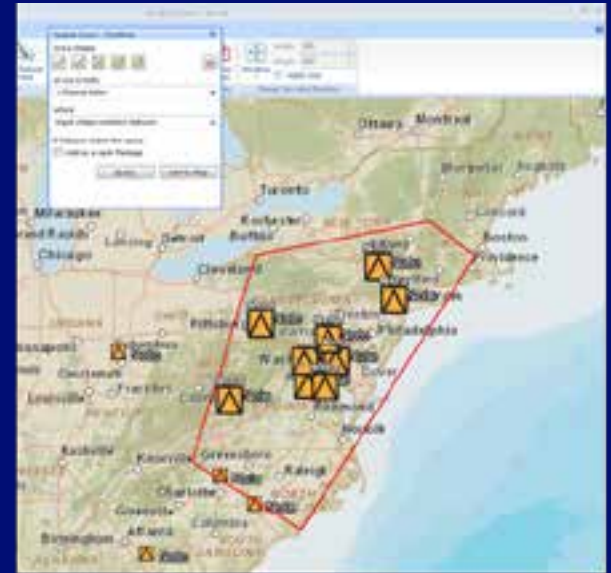


Example Tornado/Severe Weather



Icon Query

- q Very fast and precise way to determine who is at risk
- q Can be exported as an .nmc file and opened in a spreadsheet
- q Spreadsheet used to track entities and find contact information



Name	Email	Phone Number
300 7512196-56418 Der Megamap (Spatial Query)	ad91760-2955-440-8C291036 abc@gmail.com 555-555-5555	FA111 140 140 Automatic
300 7512196-56418 Der Megamap (Spatial Query)	ae756261-7110-4300-8C291036 abc@gmail.com 555-555-5555	FA111 140 140 Automatic
300 7512196-56418 Der Megamap (Spatial Query)	5e52e076-4300-8900-8C291036 abc@gmail.com 555-555-5555	FA111 140 140 Automatic
300 7512196-56418 Der Megamap (Spatial Query)	8389127e-8628-4117-8C291036 abc@gmail.com 555-555-5555	FA111 140 140 Automatic

From crisis to contact in minutes

Results of using GIS

q Before

- § Responses took 6 people approximately 8 hours
- § Responses were broad
- § Data incomplete and media based
- § No common picture

q After

- § Responses take 2 people < 2 hours
- § Responses are focused to only facilities at risk
- § Responses based authoritative data
- § Data is shared
- § We are normally 24-48 hours ahead of the "Weather Channel"
- § **We've responded to more hazards!**



1 Years worth of contacts



Lessons Learned

- q It works very well!
- q Build icons that are secure from the start
- q Have multiple feeds for data
 - § Links go down
 - § Links don't update
- q Understand the limitations of your data
 - § Modelled or actual
 - § Probability of error
 - § What does a storm report truly mean
- q Trust folks on the ground



www.selectagents.gov



For more information, please contact Select Agent Program

Telephone: 301-851-3300 (select option 1) (APHIS) or 404-718-2000 (CDC)

E-mail: ASAP@aphis.usda.gov (APHIS) or lrsat@cdc.gov (CDC)

Web: <http://www.selectagent.gov/>

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Select Agent Program.



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