



A GIS Perspective on Trends in Mapping Hazard and Risk

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Photo - Steve Zumwalt/FEMA - Location: Jamestown, CO

Five Elements of GIS



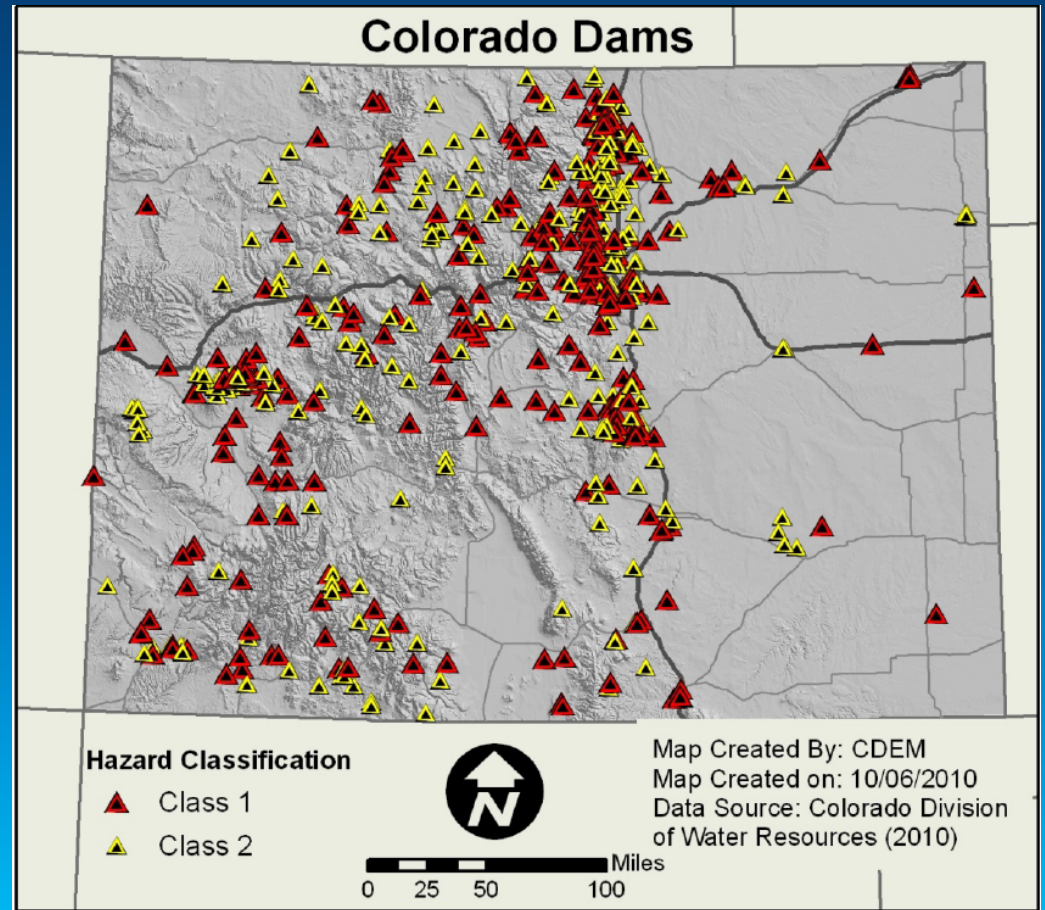
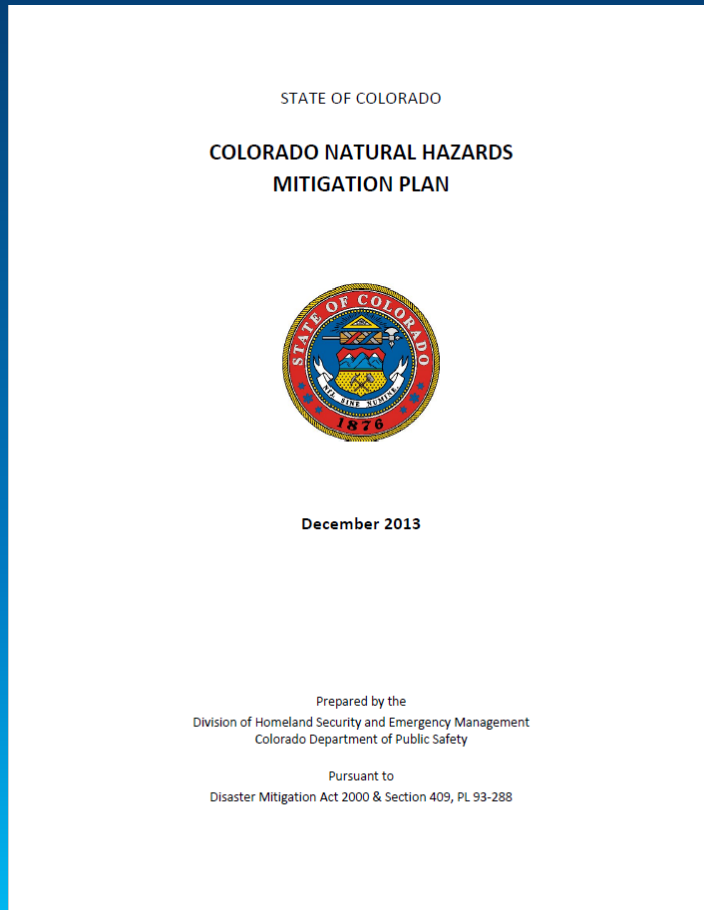
Typical Emergency Management Org Chart

Where does mapping hazard and risk fall?



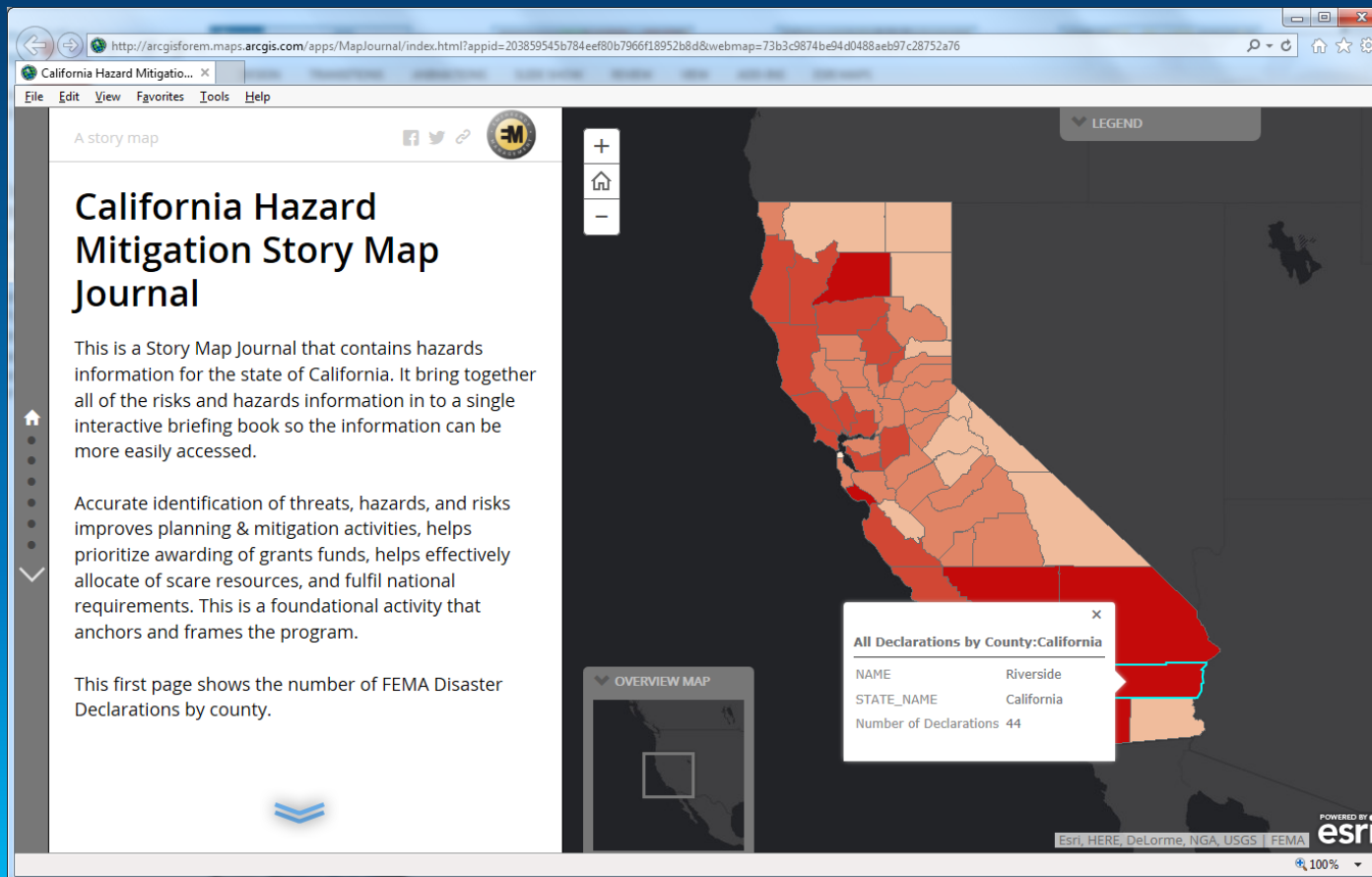
Natural Hazards Mitigation Plans

Great maps! Where is the data?



Operationalize Hazard Information

Interactive access to information found in Natural Hazard Mitigation Plans



California Hazard Mitigation Story Map Journal

This is a Story Map Journal that contains hazards information for the state of California. It bring together all of the risks and hazards information in to a single interactive briefing book so the information can be more easily accessed.

Accurate identification of threats, hazards, and risks improves planning & mitigation activities, helps prioritize awarding of grants funds, helps effectively allocate of scare resources, and fulfil national requirements. This is a foundational activity that anchors and frames the program.

This first page shows the number of FEMA Disaster Declarations by county.

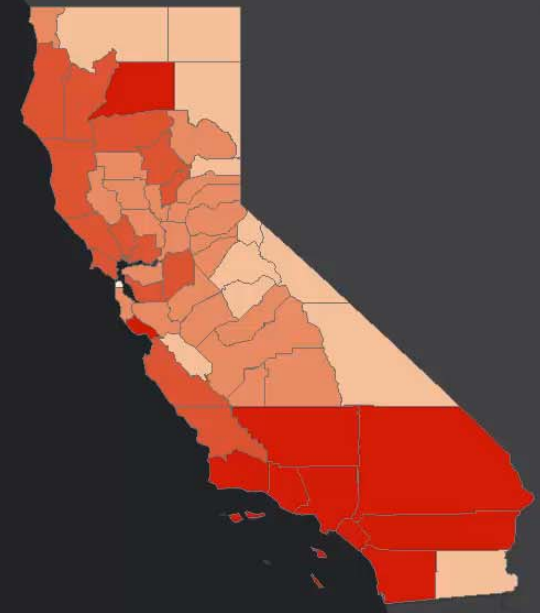
Earthquakes

This is a map of shaking hazard and faults.

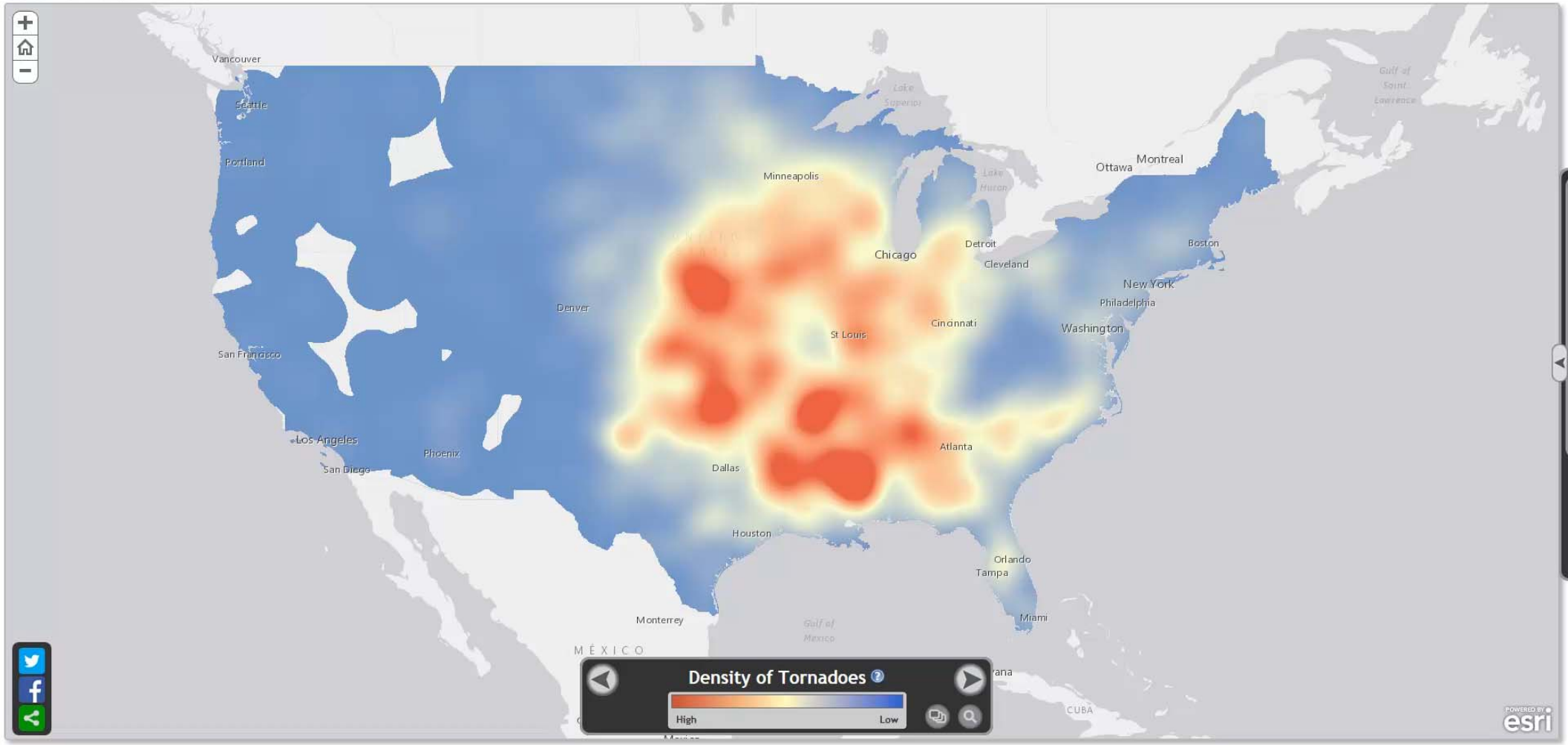
This is a map of shaking hazard (ground acceleration in % gravity) for short structures. More information at California Geological Survey (<http://www.consrv.ca.gov/cgs/rghm/psha/Pages/index.aspx>).

These zones are delineated to assist cities and counties in fulfilling their responsibilities for protecting the public safety from the effects of earthquake fault rupture as required by the Alquist-Priolo Earthquake Fault Zoning Act (Public Resources Code Sections 2623 et seq). For a general description of the Alquist-Priolo Earthquake Fault Zoning Act and regulations, downloadable official zones and related information, please refer to the California Geological Survey Website at (<http://www.conservation.ca.gov/cgs/rghm/ap/Pages/index.aspx>)

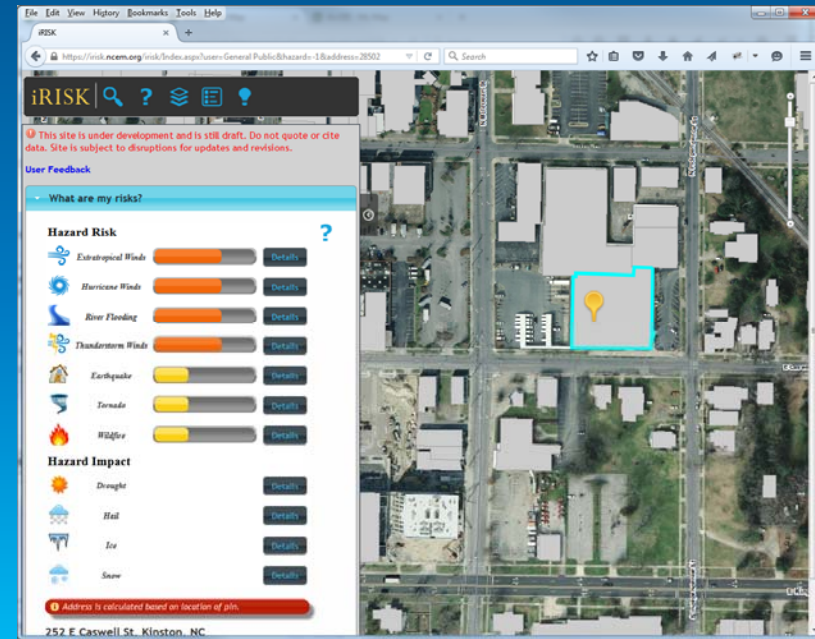
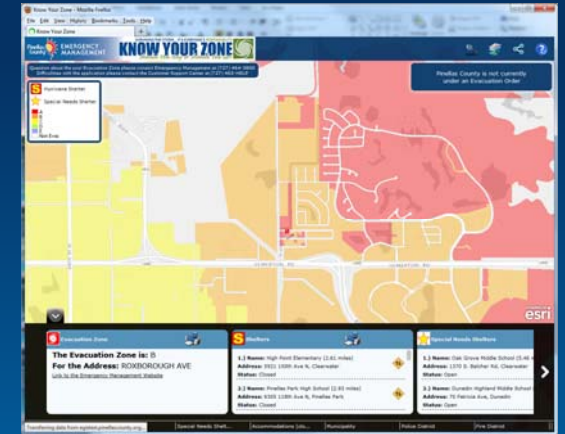
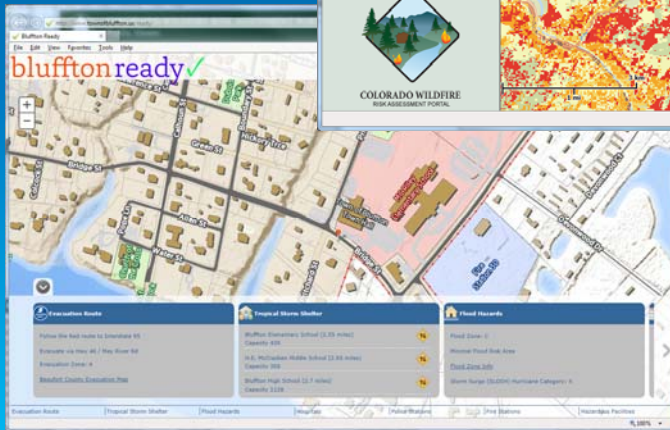
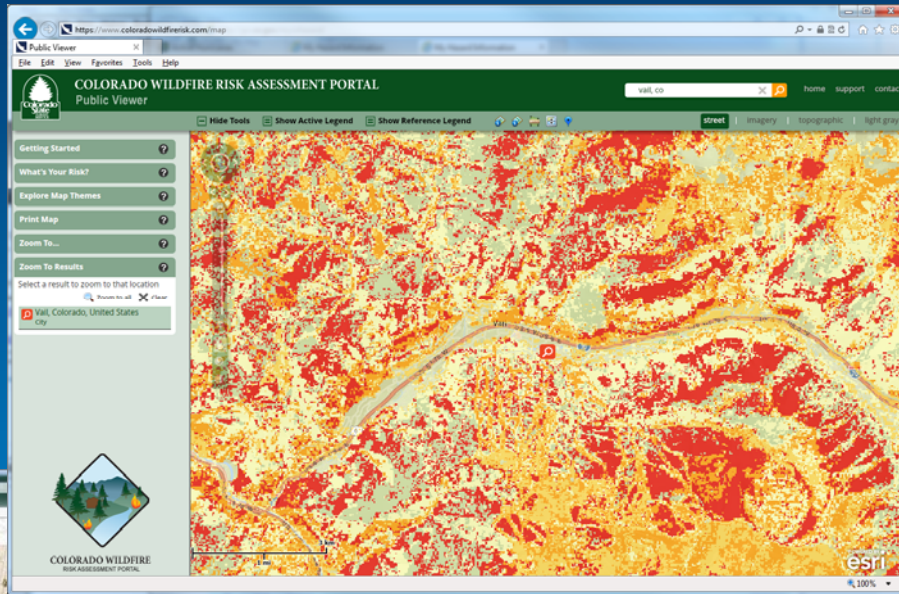
FAULT TRACES Fault trace features are from the California Geological Survey 2010 Fault Map of California and show the location of the ground surface trace of faults that are categorized by age for the past 1.6 million years (previously-defined Quaternary Period). Users of this information should be aware that active faults and earthquakes are the subject of continuing research and that refinement of the interpretations given here are sure to come within a few years. California Geological Survey Bulletin 201, "An Explanatory Text to Accompany the Geologic Map of California," published separately, contains detailed source index maps and references to all the published and unpublished reports and information used in compiling the 1975 Fault Map of



LEGEND

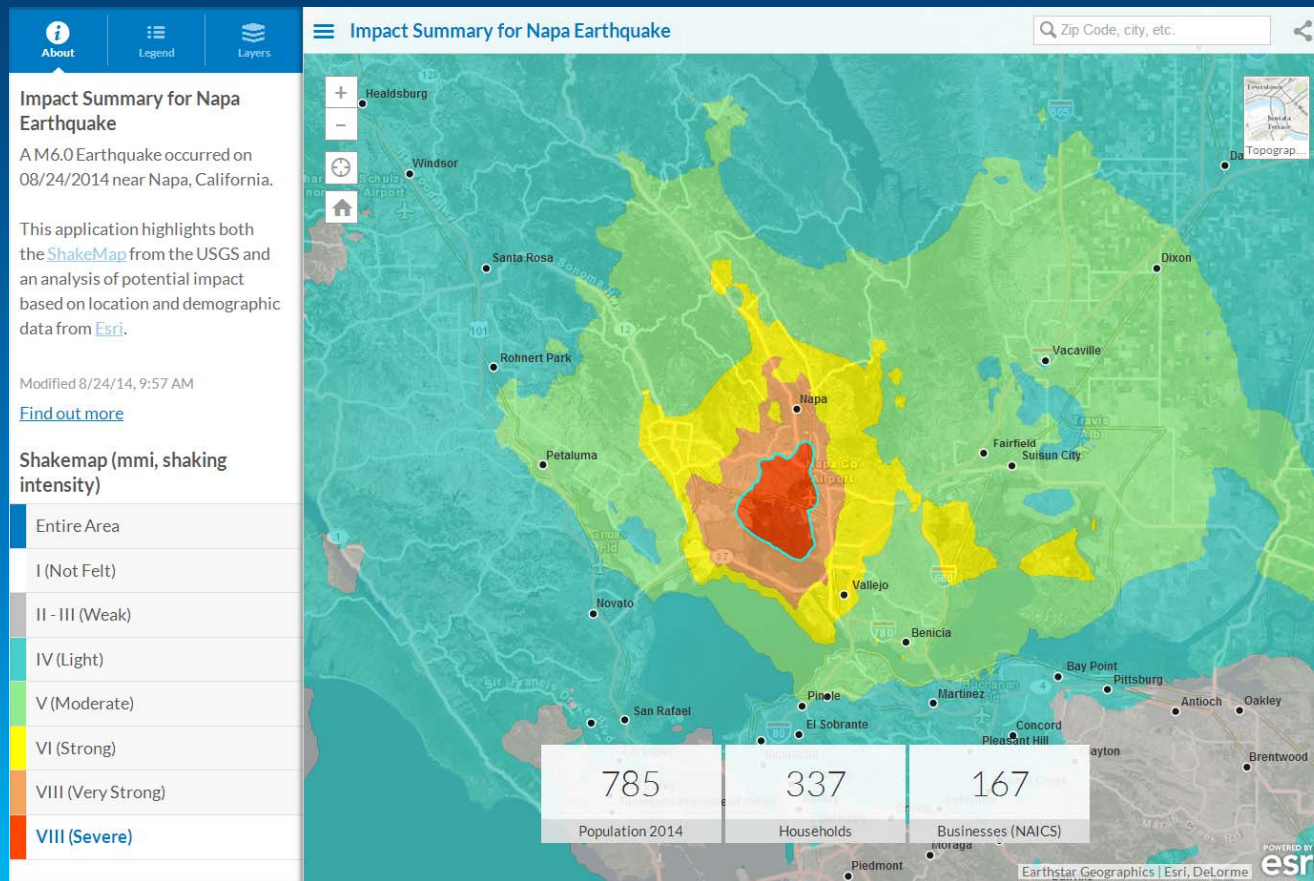


Sharing Hazard Information with the Public

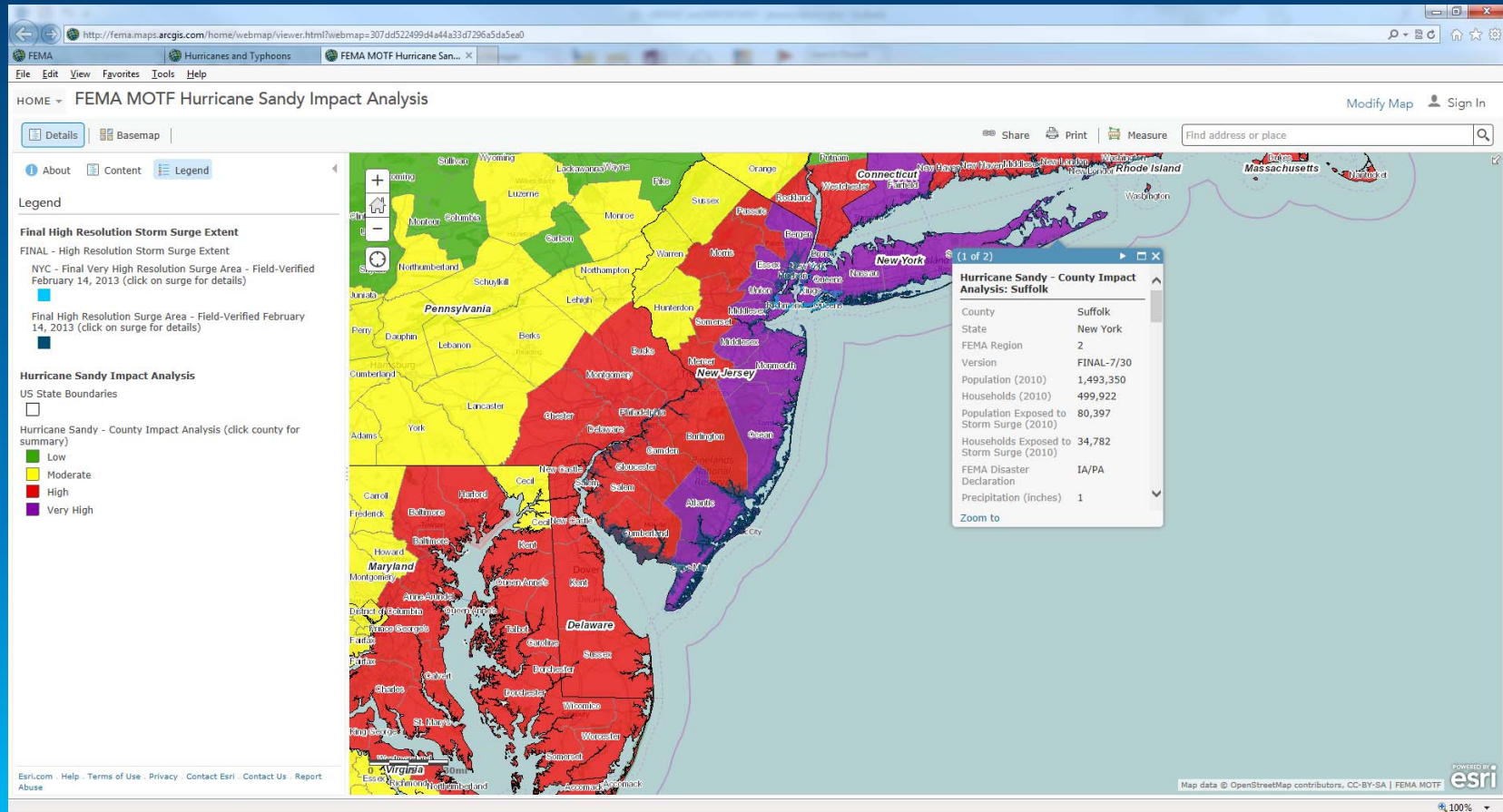


Understanding Impact

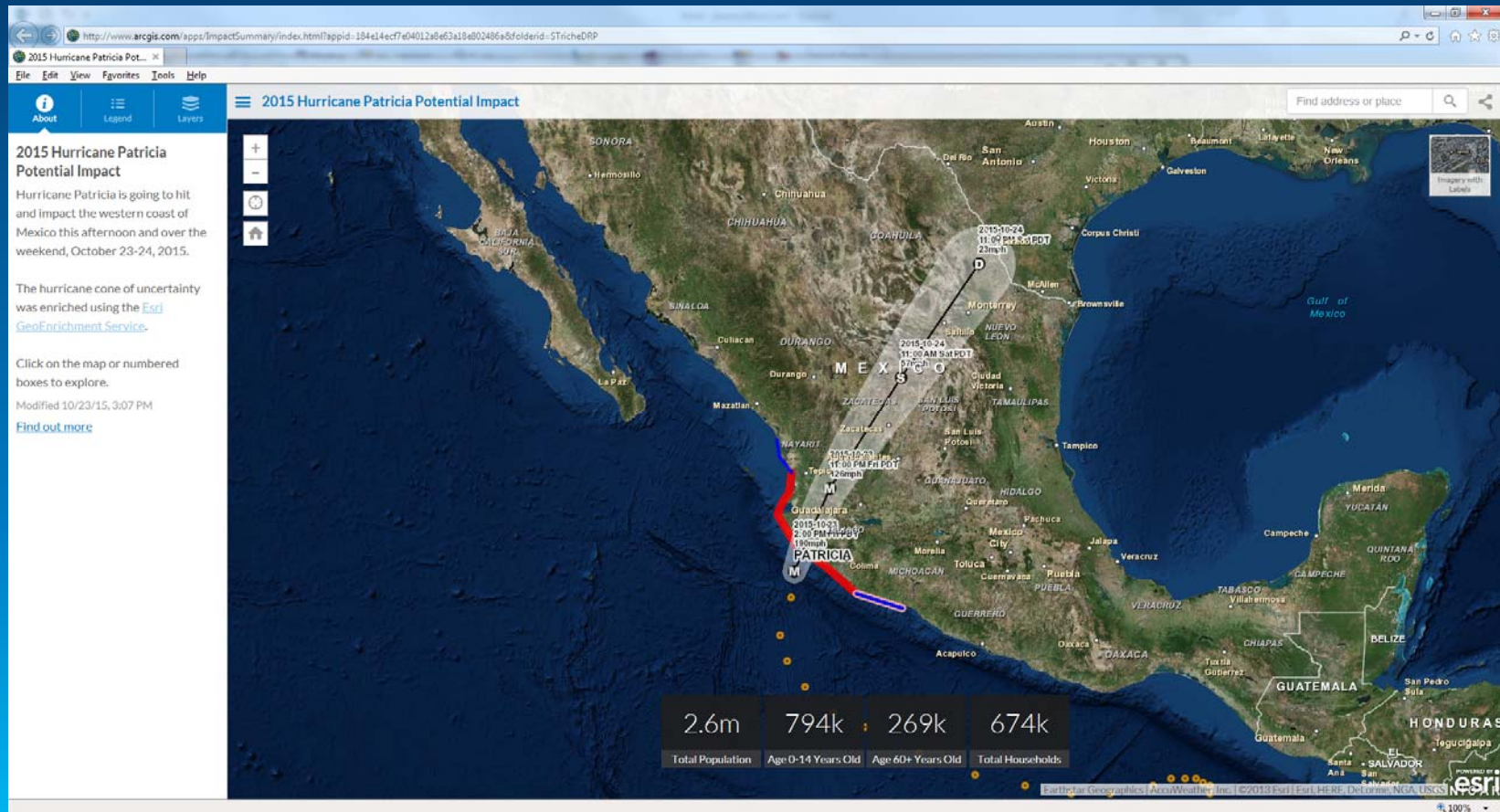
Analysis can now be done on the web



Hurricane Sandy – FEMA Modelling Task Force

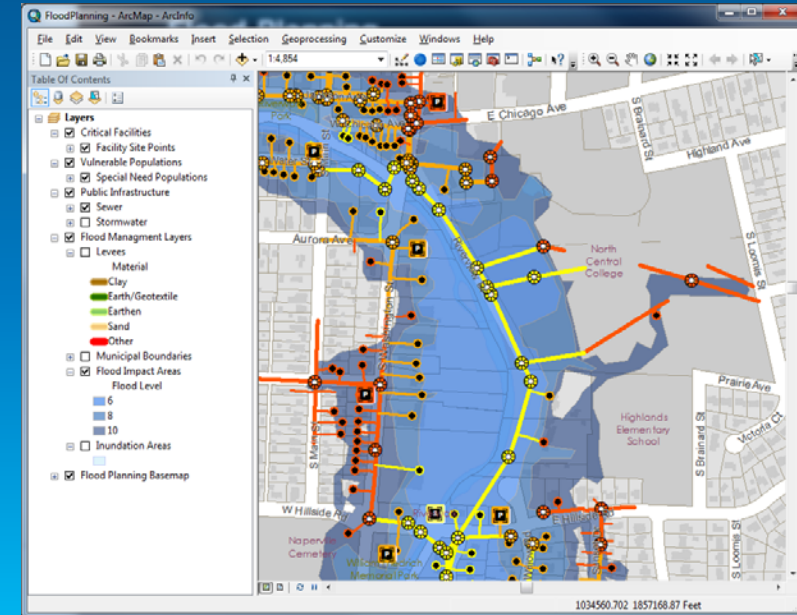
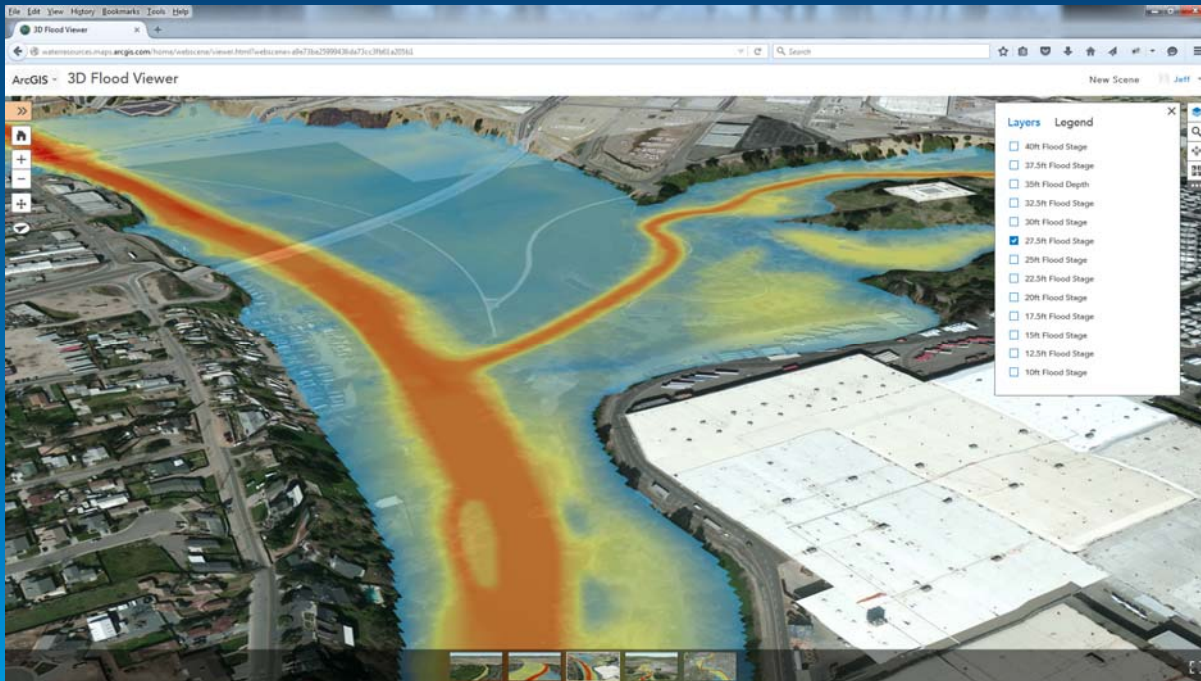


Hurricane Patricia

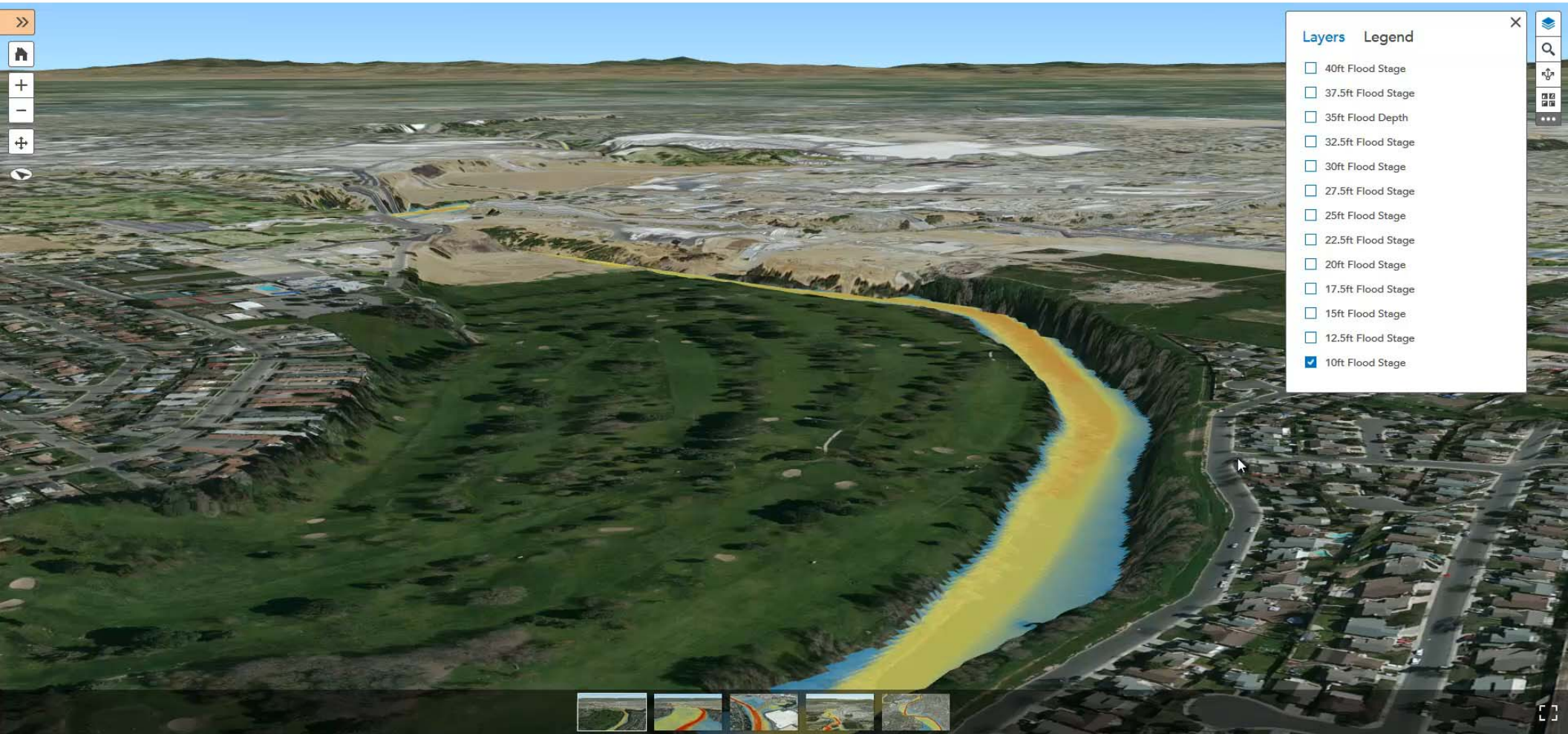


Flood Planning

Incorporating the results of flood modelling in to preparedness plans



Navigation controls: Home, Zoom In, Zoom Out, Full Screen, etc.



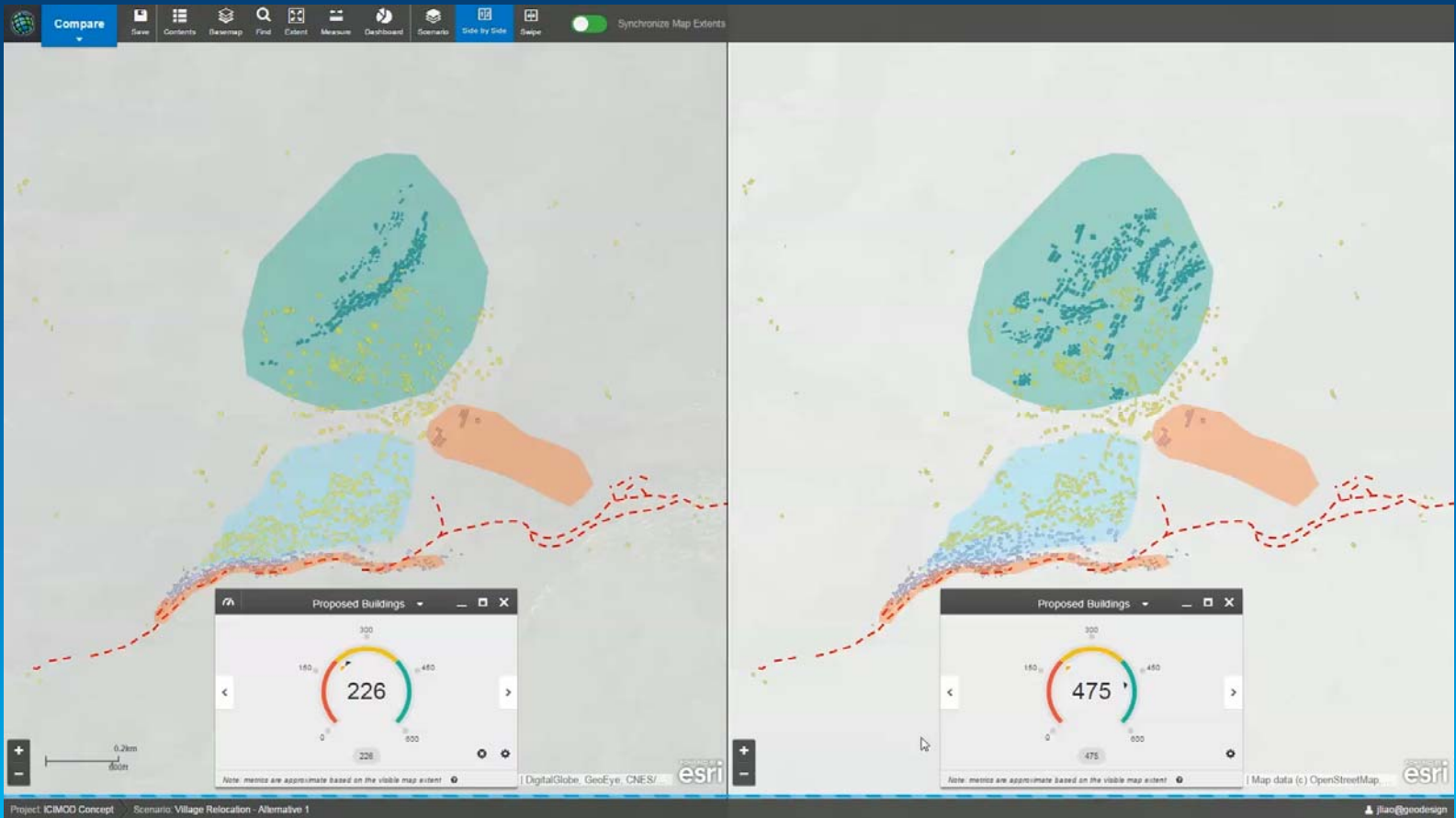
Layers Legend

- 40ft Flood Stage
- 37.5ft Flood Stage
- 35ft Flood Depth
- 32.5ft Flood Stage
- 30ft Flood Stage
- 27.5ft Flood Stage
- 25ft Flood Stage
- 22.5ft Flood Stage
- 20ft Flood Stage
- 17.5ft Flood Stage
- 15ft Flood Stage
- 12.5ft Flood Stage
- 10ft Flood Stage



Geodesign for Recovery and Resiliency

Nepal Earthquake Recovery





Conclusion

- **Technology has evolved**
 - The bar has been lowered and barriers to entry removed
- **Has policy and leadership kept up???**
- **Where are the incentives for multi-jurisdictional planning?**
- **Is mitigation the natural long term home for mapping hazard and risk?**
 - Risk Communication / Public Information?
 - Operations / Response?
- **How else could understanding risk be incentivized?**

- Identify Hazards (that are most likely to affect a jurisdiction)
- Profile the hazards (past, present, and future)
- Assess Vulnerability
- *Hazard Identification: Anything which either threatens the residents of a community or the things that they value*
- *Exposure: A community's assets: people, property, essential facilities, and infrastructure potentially exposed to a hazard*
- *Vulnerability: What part of an "exposure" is at "risk" to each "hazard"*



Understanding our world.