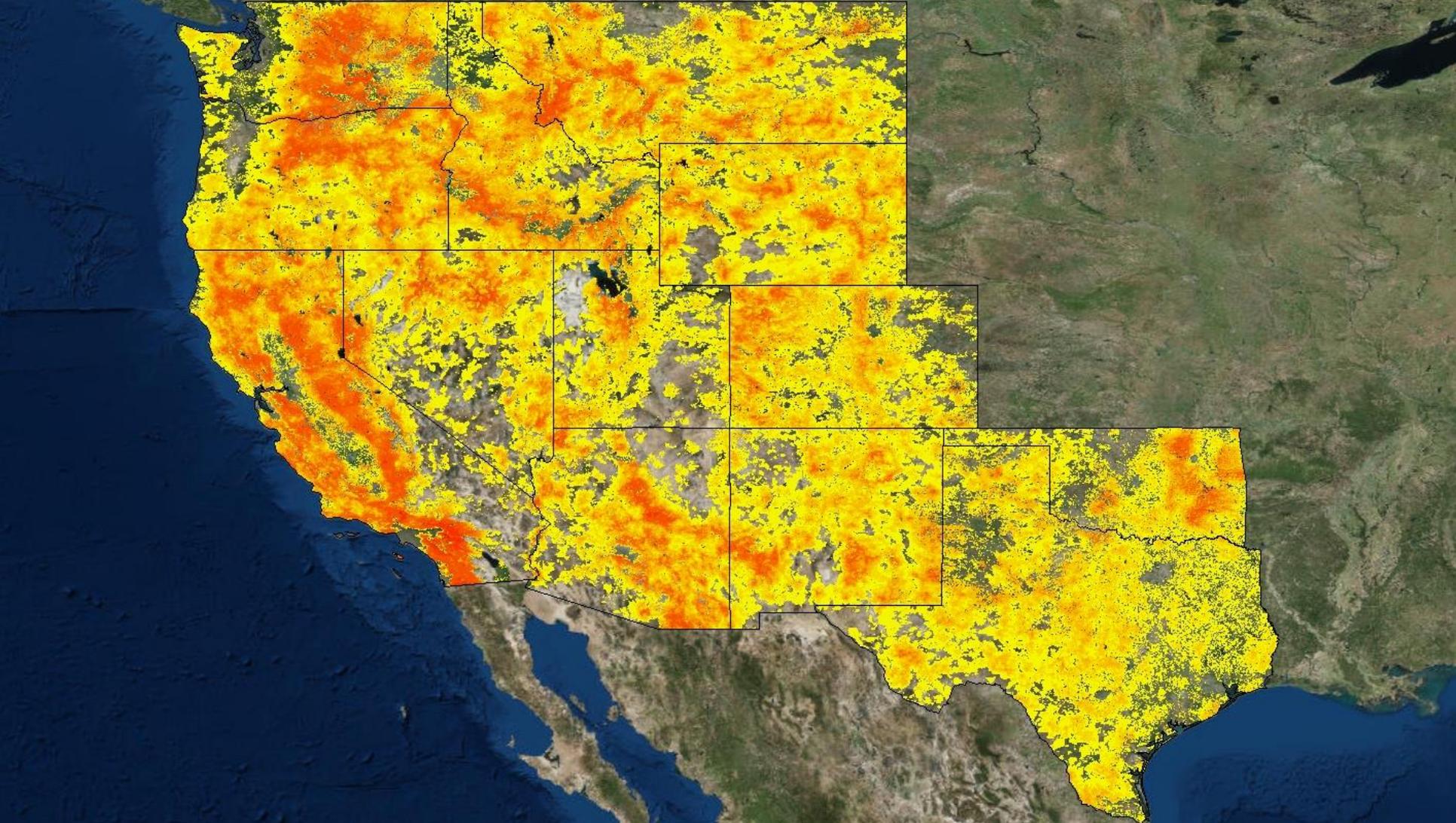


# Leveraging Geospatial Analytics

**Sudha Maheshwari, Ph.D.**  
**Katharine Stevens**

©2018 AIR Worldwide

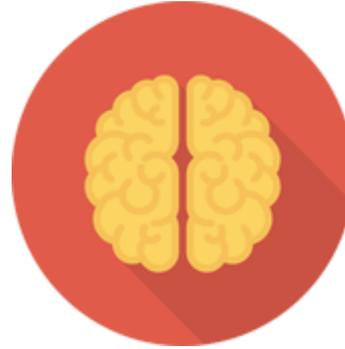




# Trends Driving the Need for Geospatial Analysis



**Big data**



**Machine learning**



**Real-time event support**



**Claims automation**



**Are underwriting guidelines being adhered to?**

**Where are my peak exposure concentrations?**

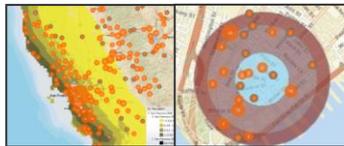
**What are my exposed limits by region?**

**How can my organization prepare for or respond to an ongoing event?**

**How are regulators tracking my accumulations?**

# Touchstone Delivers a Variety of Analytics

Geospatial  
Exposed Limits  
Zones  
Event Footprints  
Rings  
Hazard



Accumulator Summary

Accumulator View	Total Replacement Value Sum	Exposed Ground Up Sum	Exposed Gross Sum
California	1,261,932,726	1,261,932,726	38,246,322
California 10%	1,261,932,726	126,193,273	15,351,563
California 2%	1,261,932,726	25,238,654	5,911,544
California 30%	1,261,932,726	292,386,546	17,688,190
California 5%	1,261,932,726	63,096,637	12,659,294
California 50%	1,261,932,726	630,966,363	27,375,215

## TOUCHSTONE®

Data Quality  
Scoring/Validation  
Augmentation



Hazard  
Static Hazard  
Event Intensities

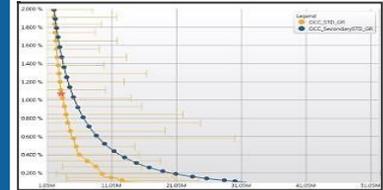
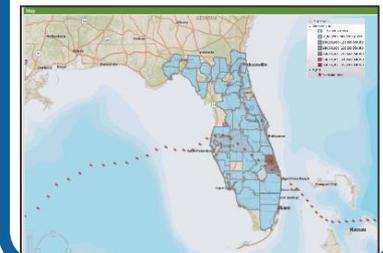
Touchstone  
Underwriter  
Streamlined Individual  
Contract Pricing



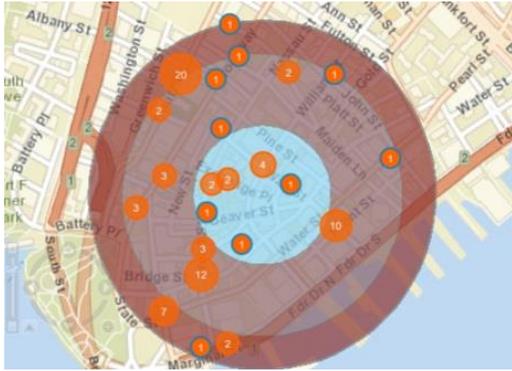
Non-Cat Analytics  
e.g., Fire/Vandalism/Theft  
ISO Loss Cost  
Property Size of Loss  
Database (PSOLD)



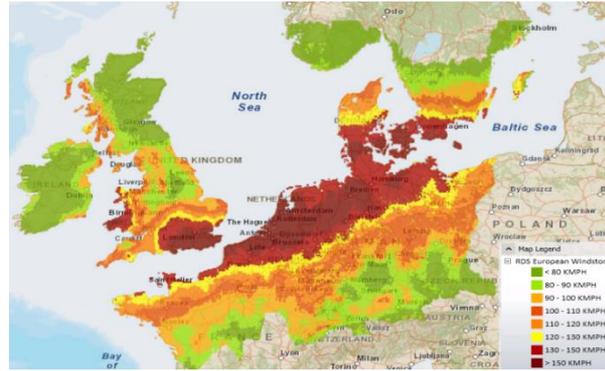
Detailed Loss  
EP Curves  
Event Loss Tables  
Historical Events  
Scenario Events

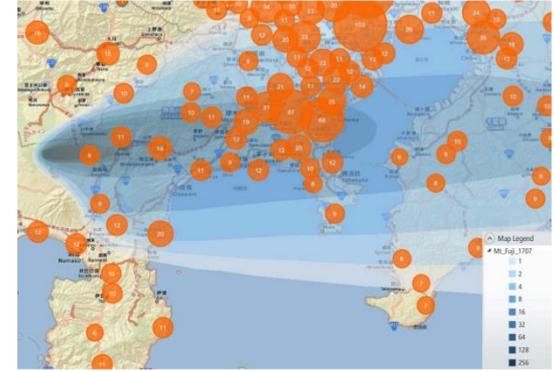
# What Is Touchstone Geospatial?



Accumulation & Hazard Analytics



GIS Data Import

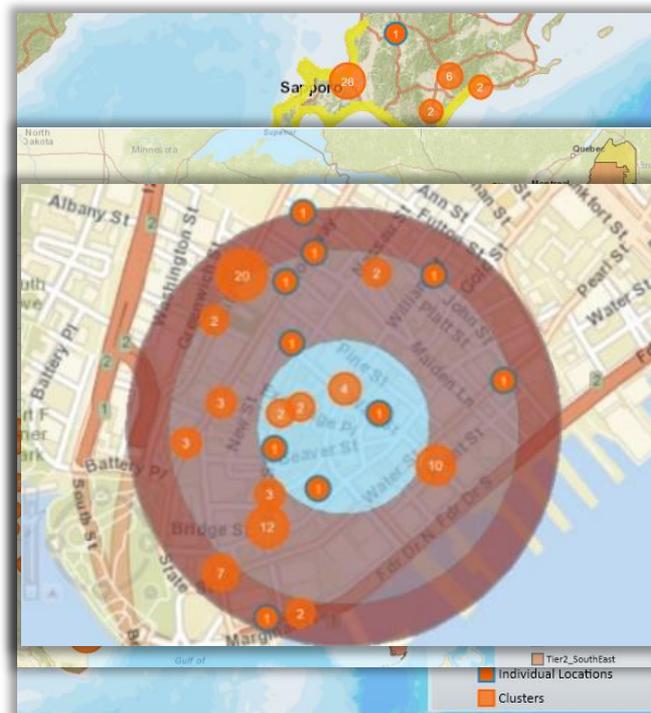


Custom Views of Risk

Common Analytics Platform

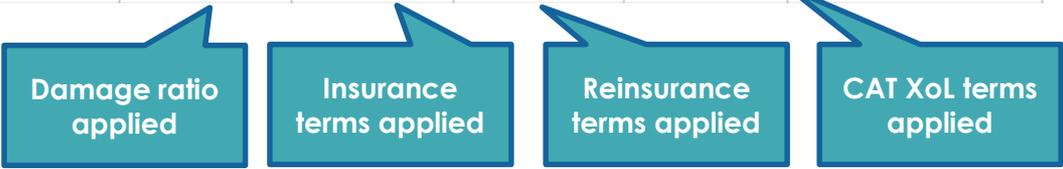
# Using Geospatial Analytics for Accumulation

- Real-time event analysis
- Report regional exposures
- Manage underwriting guidelines

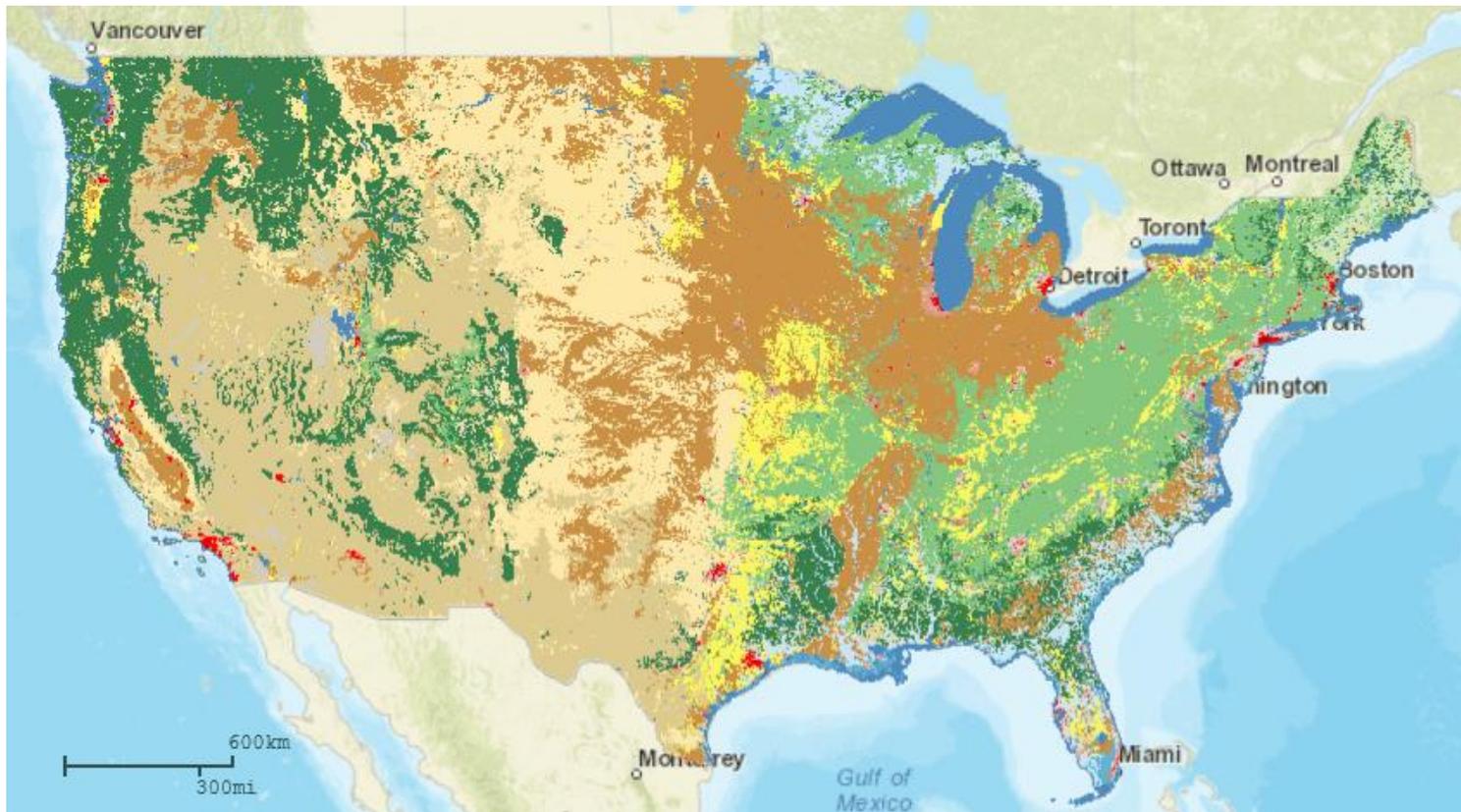


# Geospatial Analytics Leverage the Financial Module

Zone Accumulation Results Overview						
Zone Info		Perspectives				Total Replacement Value
Name ▲	Ground Up	Gross	Net of Pre-CAT	Post-CAT Net		
Wind: US-Alabama	122,371,300	→ 10,000,000	→ 7,000,000	→ 7,000,000	122,371,300	
Wind: US-Arizona	445,351,138	→ 234,250,000	→ 225,250,000	→ 179,250,001	445,351,138	
Wind: US-Arkansas	108,882,729	→ 14,554,000	→ 9,000,000	→ 9,000,000	108,882,729	
Wind: US-California	2,750,716,445	→ 214,219,771	→ 202,219,771	→ 156,219,772	2,750,716,445	
Wind: US-Colorado	111,628,994	→ 87,645,000	→ 81,645,000	→ 35,645,001	111,628,994	
Wind: US-Connecticut	269,114,070	→ 77,645,355	→ 74,000,000	→ 33,400,001	269,114,070	
Wind: US-Dist of Columbia	136,515,605	→ 111,978,615	→ 102,978,615	→ 56,978,616	136,515,605	
Wind: US-Florida	589,871,999	→ 198,480,590	→ 186,480,590	→ 140,480,591	589,871,999	
Wind: US-Georgia	325,584,963	→ 80,508,050	→ 74,508,050	→ 33,450,806	325,584,963	
Wind: US-Illinois	531,997,362	→ 210,000,000	→ 198,000,000	→ 152,000,001	531,997,362	
Wind: US-Indiana	25,475,000	→ 25,000,000	→ 22,000,000	→ 22,000,000	25,475,000	



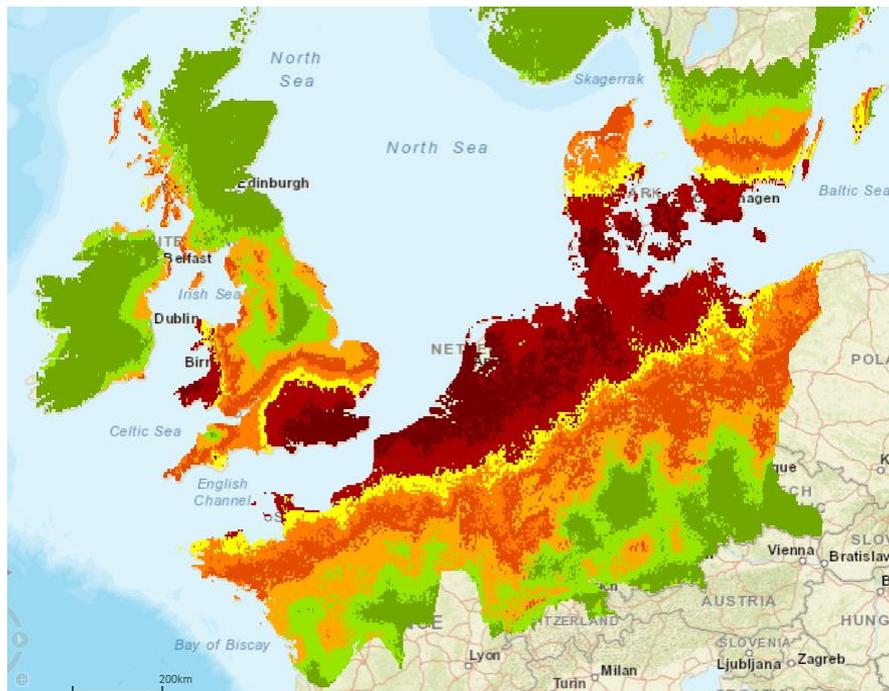
# Bring in Your Own Layers and View of Risk



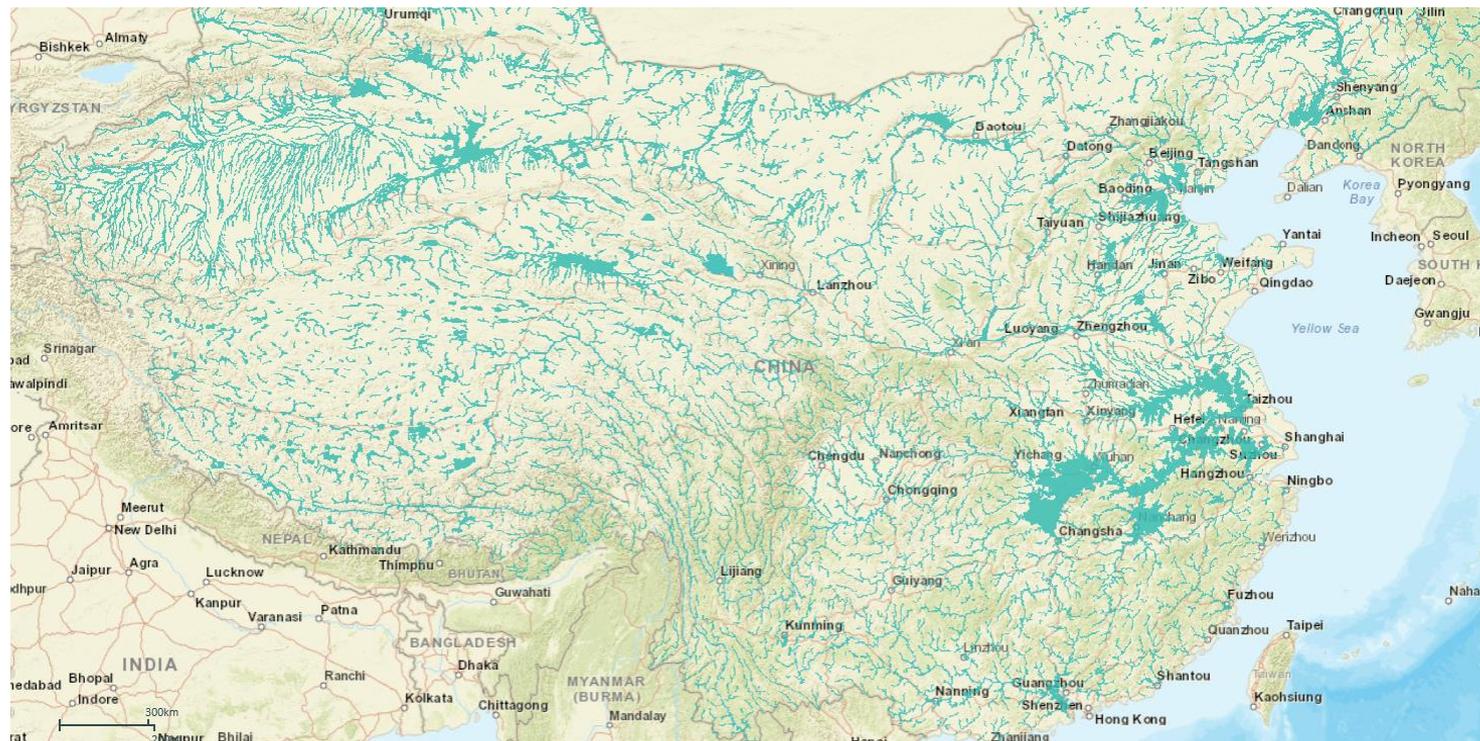
# Wide Range of Layers Available in Touchstone



# Wide Range of Layers Available in Touchstone



# Wide Range of Layers Available in Touchstone



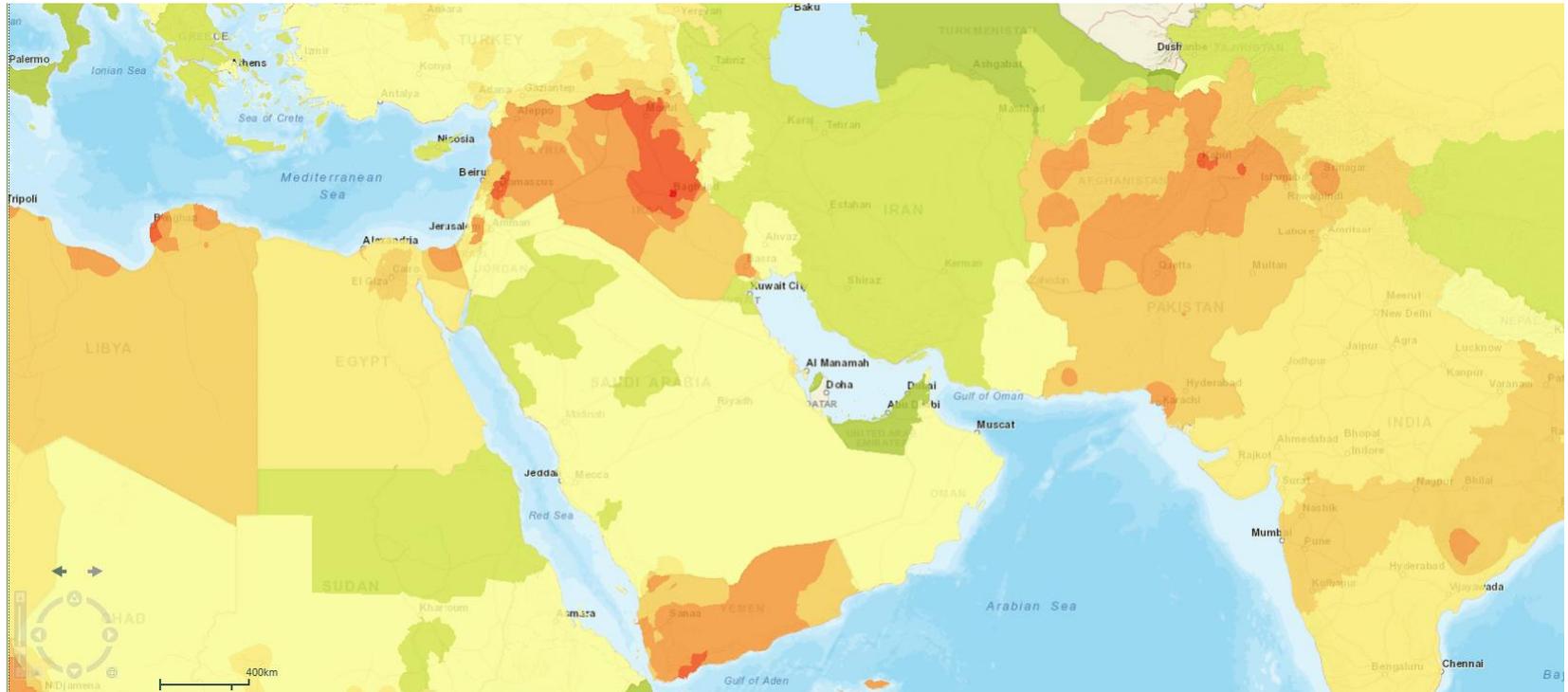
# Wide Range of Layers Available in Touchstone



# Wide Range of Layers Available in Touchstone



# Wide Range of Layers Available in Touchstone

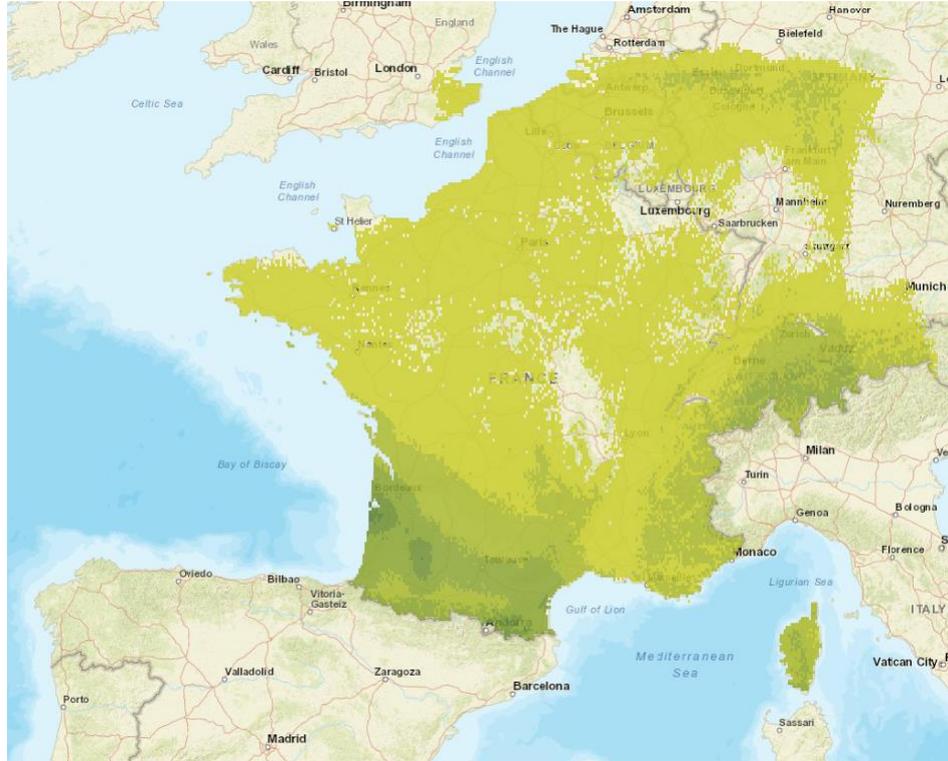




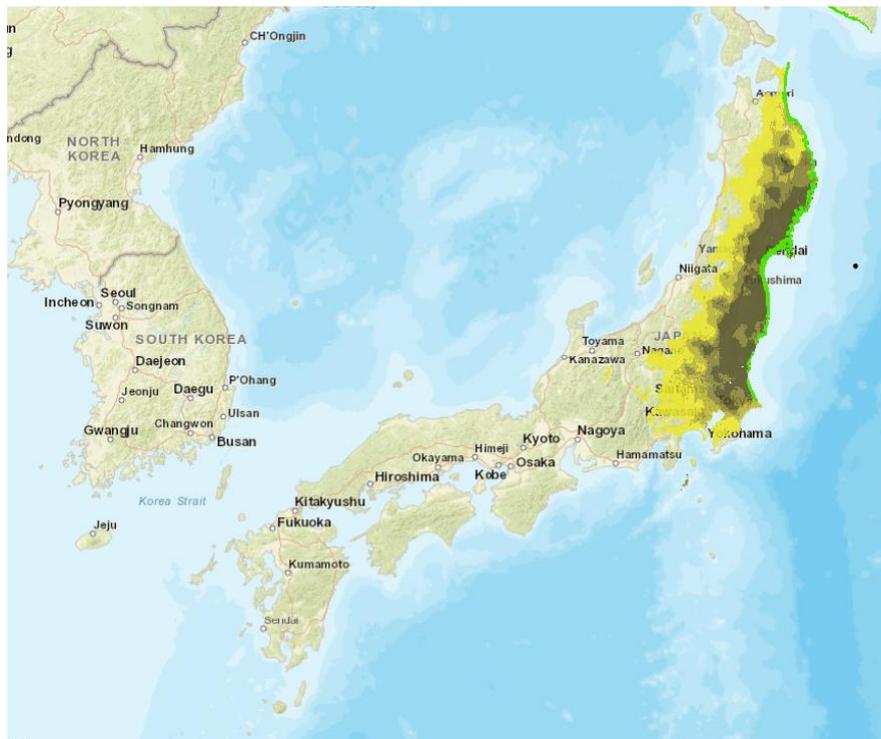
# Wide Range of Layers Available in Touchstone



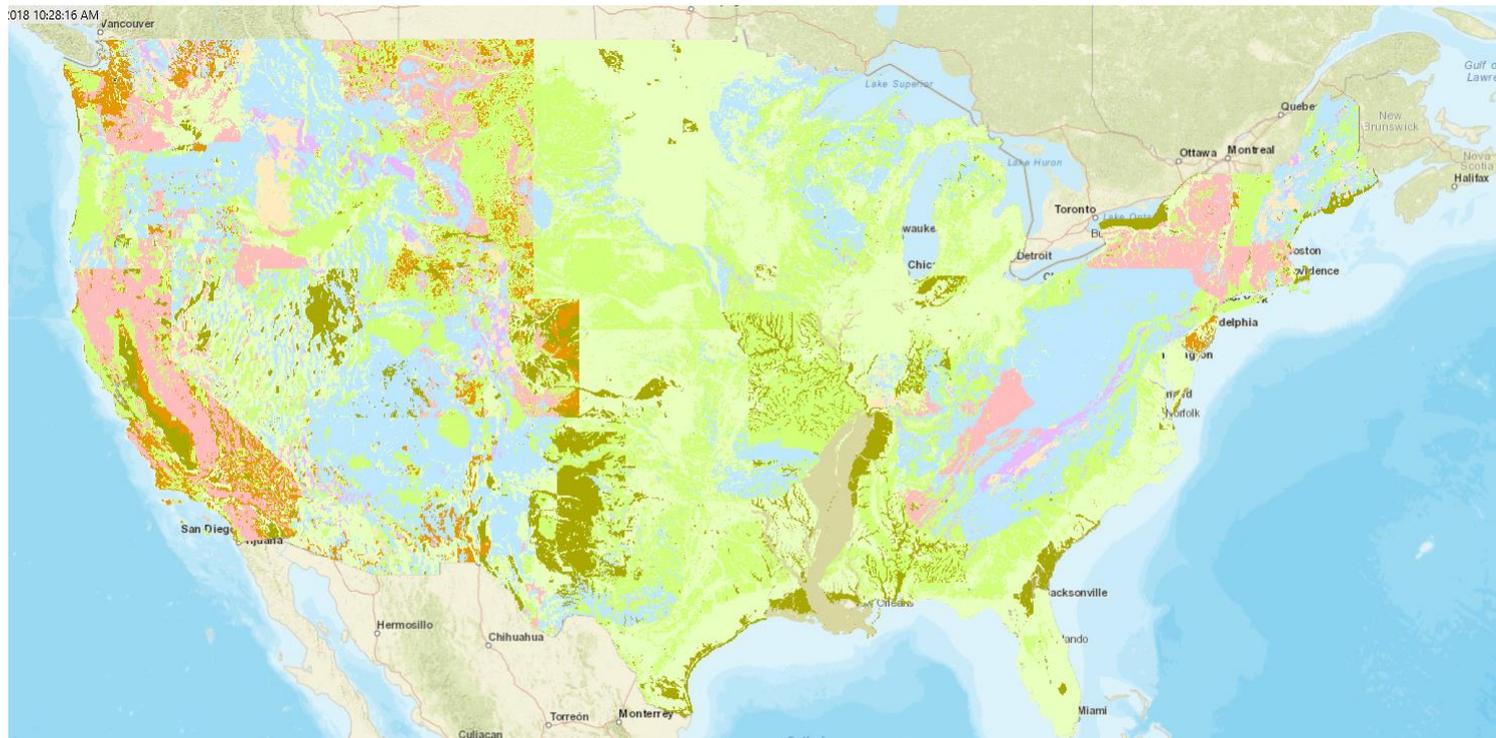
# Wide Range of Layers Available in Touchstone



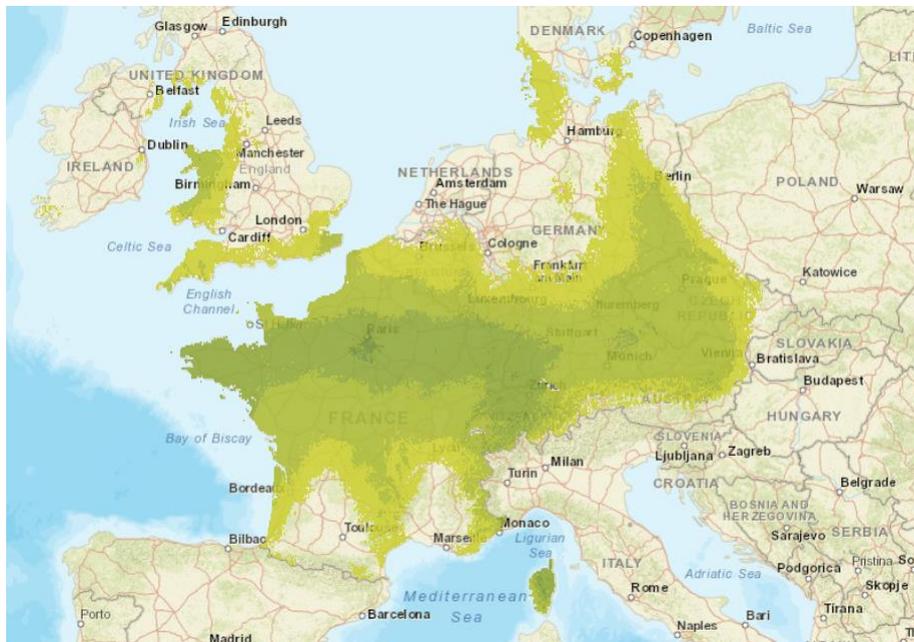
# Wide Range of Layers Available in Touchstone



# Wide Range of Layers Available in Touchstone



# Wide Range of Layers Available in Touchstone

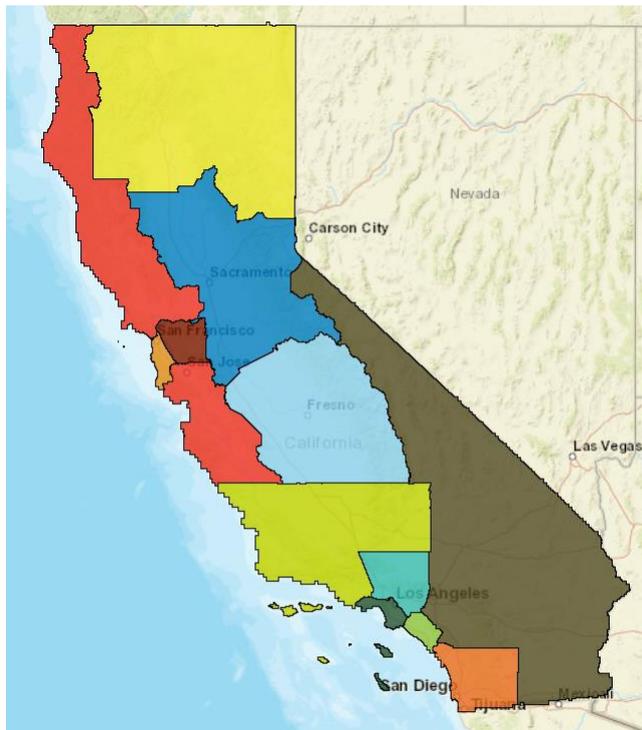




# Wide Range of Layers Available in Touchstone



# Wide Range of Layers Available in Touchstone



# Wide Range of Layers Available in Touchstone



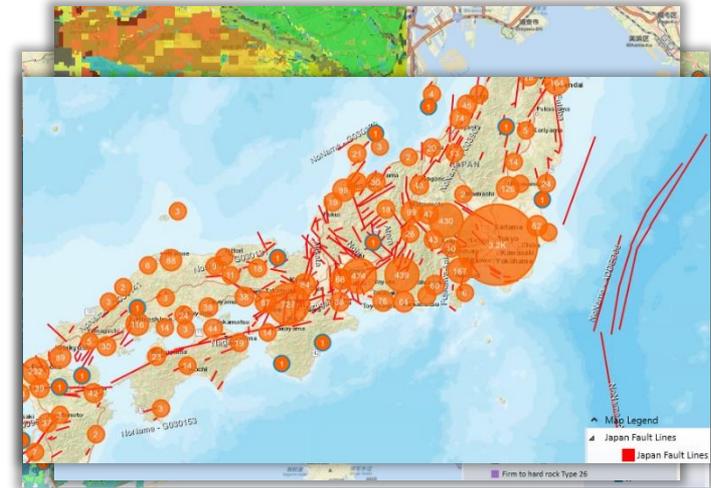


# Wide Range of Layers Available in Touchstone

	Earthquake	Extratropical Cyclone	Inland Flood	Storm Surge	Terrorism	Tropical Cyclone	Tsunami	Wildfire	Total
Africa					1				1
Asia	94		23		1	73	1		192
Australia	68					24		2	94
Europe		38	4		1				43
North America	104		10	7	1	219		19	360
South America	35		6		2				43
<b>Total</b>	<b>301</b>	<b>38</b>	<b>43</b>	<b>7</b>	<b>6</b>	<b>316</b>	<b>1</b>	<b>21</b>	<b>733</b>

# Intersect Accumulations Against Hazard Layers

- Soil type
- Distance to fault lines
- Flood zones
- And more ...



# Recent Enhancements for Geospatial Analytics

**Performance**

**User  
Experience**

**GIS  
Capabilities**

# Performance Improvement Summary



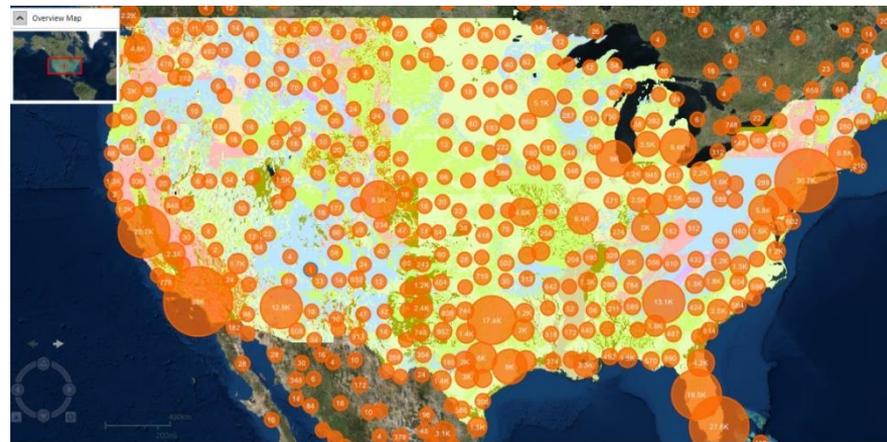
Bring in larger GIS data sets



Import and render GIS data on maps faster



Run geospatial analysis faster



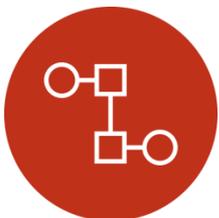
# User Experience Improvements Summary



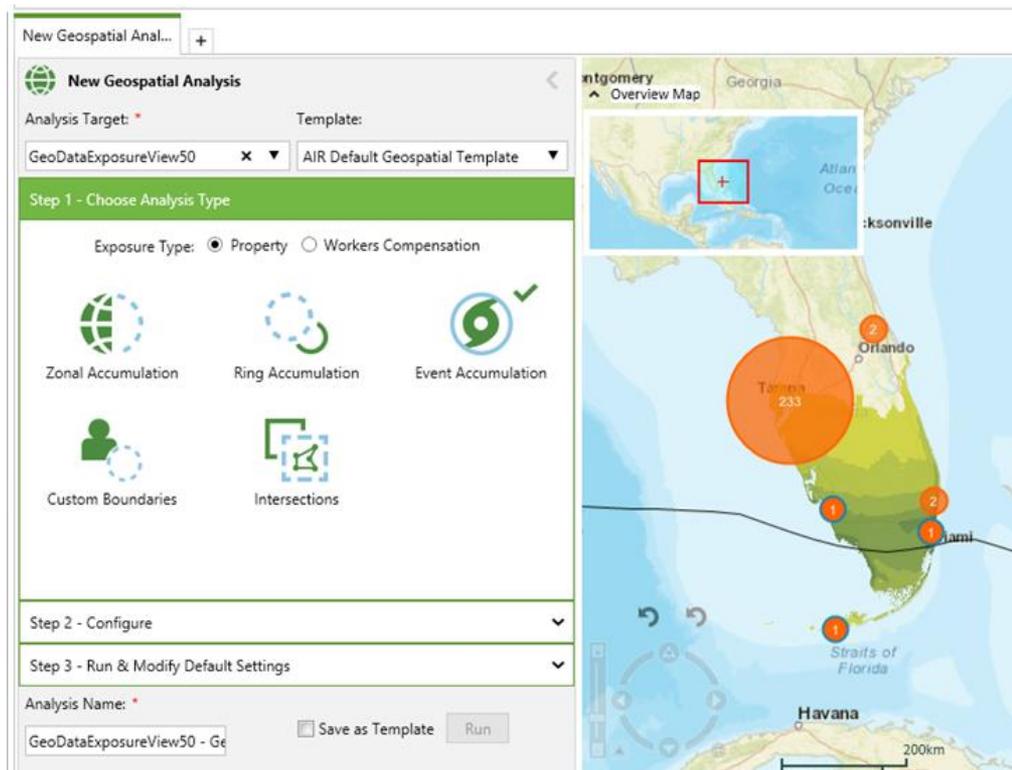
Intuitive and workflow-oriented experience



Streamlined analysis setup



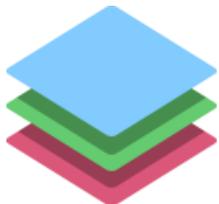
Standardized user experience



# Additional GIS-Related Functionalities Are Included



Supports additional file formats



Supports additional projections



More map tools



R Worldwide

Supports web map layers

## Touchstone 5.0

Vector	Raster	Projections
Shapefile	AIR CSV	WGS84

## Touchstone 5.1

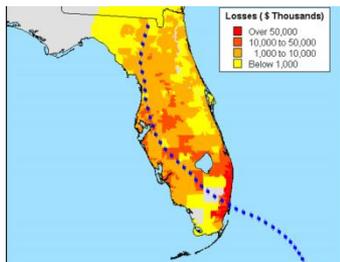
Vector	Raster	Projections
Shapefile	GeoTiff	WGS84
GeoJSON	Erdas IMG	UTM
GML	ENVI	Lambert
SQLite	RasterLite	Albers
	ArcInfo ASCII	...

## Other Recent Enhancements

- Drawing tool
- Non-cat peril code added
- Analysis templates
- Visualization of ring centroids
- Dynamic ring analysis enhancements

# Demo

# Architecting for the Future



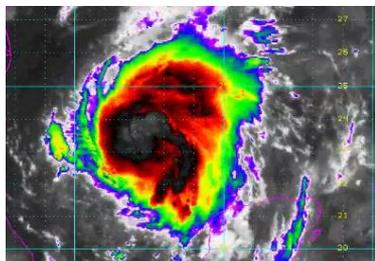
**Visualization of Results**



**Improved Zone Management**



**AIR Catalog Explorer**



**Real-Time Events**



**Web-Based Result Display**

# Thank You!

A recording of today's webinar and the slide deck will be distributed shortly.

If your question isn't covered during Q&A, an AIR representative will reach out to you and provide a response.