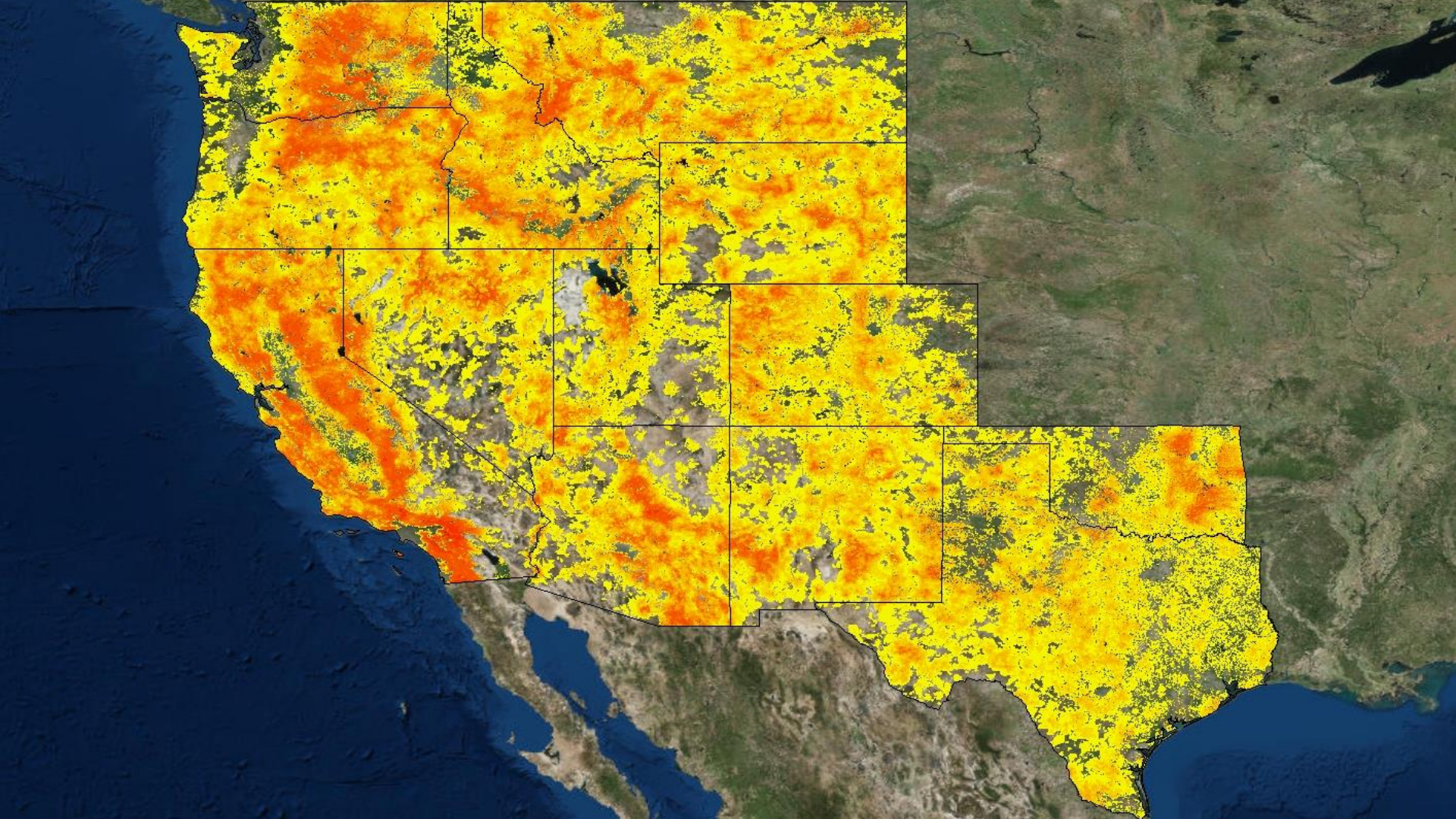


Leveraging Geospatial Analytics

Sudha Maheshwari, Ph.D.
Katharine Stevens

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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

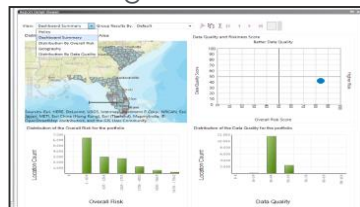


Exposure Summary

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	252,386,546	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



Touchstone
Underwriter
Streamlined Individual
Contract Pricing



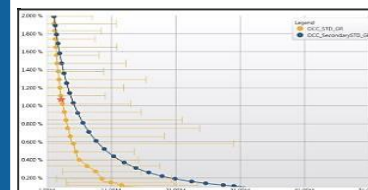
Hazard
Static Hazard
Event Intensities

Category	Sub-category	Value	Unit
Fire	Fire Hazard	1.0	1.0
	Fire Hazard	1.0	1.0
	Fire Hazard	1.0	1.0
	Fire Hazard	1.0	1.0
Vandalism	Vandalism Hazard	1.0	1.0
	Vandalism Hazard	1.0	1.0
	Vandalism Hazard	1.0	1.0
	Vandalism Hazard	1.0	1.0
Theft	Theft Hazard	1.0	1.0
	Theft Hazard	1.0	1.0
	Theft Hazard	1.0	1.0
	Theft Hazard	1.0	1.0

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

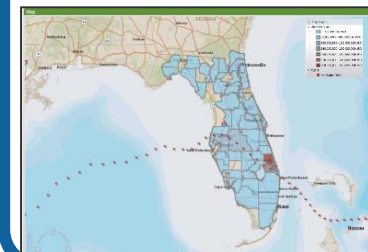


Detailed Loss
EP Curves
Event Loss Tables
Historical Events
Scenario Events

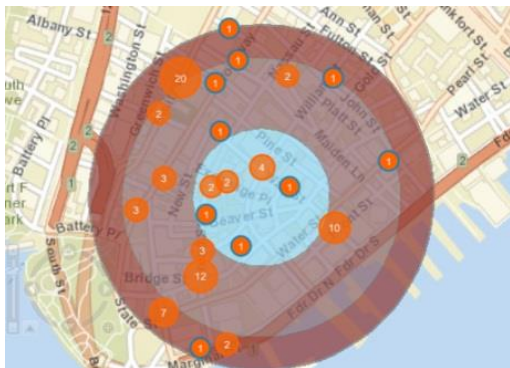


Scenario Events

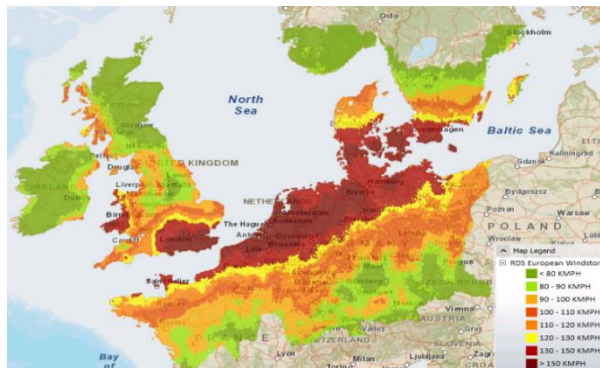
Category	Sub-category	Value	Unit
Fire	Fire Hazard	1.0	1.0
	Fire Hazard	1.0	1.0
	Fire Hazard	1.0	1.0
	Fire Hazard	1.0	1.0
Vandalism	Vandalism Hazard	1.0	1.0
	Vandalism Hazard	1.0	1.0
	Vandalism Hazard	1.0	1.0
	Vandalism Hazard	1.0	1.0
Theft	Theft Hazard	1.0	1.0
	Theft Hazard	1.0	1.0
	Theft Hazard	1.0	1.0
	Theft Hazard	1.0	1.0



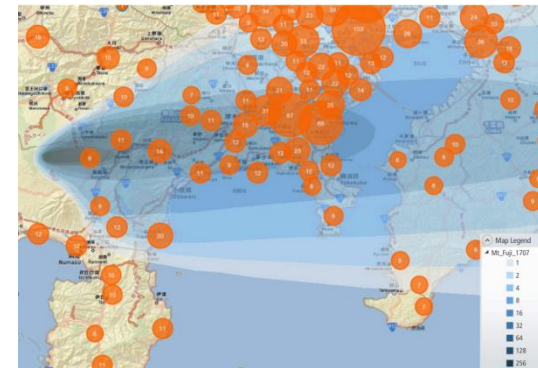
What Is Touchstone Geospatial?



Accumulation & Hazard Analytics



GIS Data Import

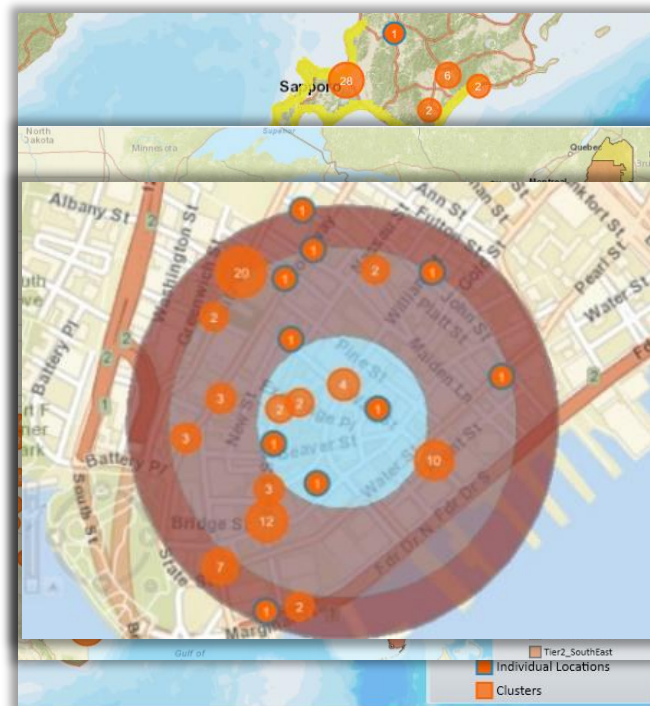


Custom Views of Risk

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

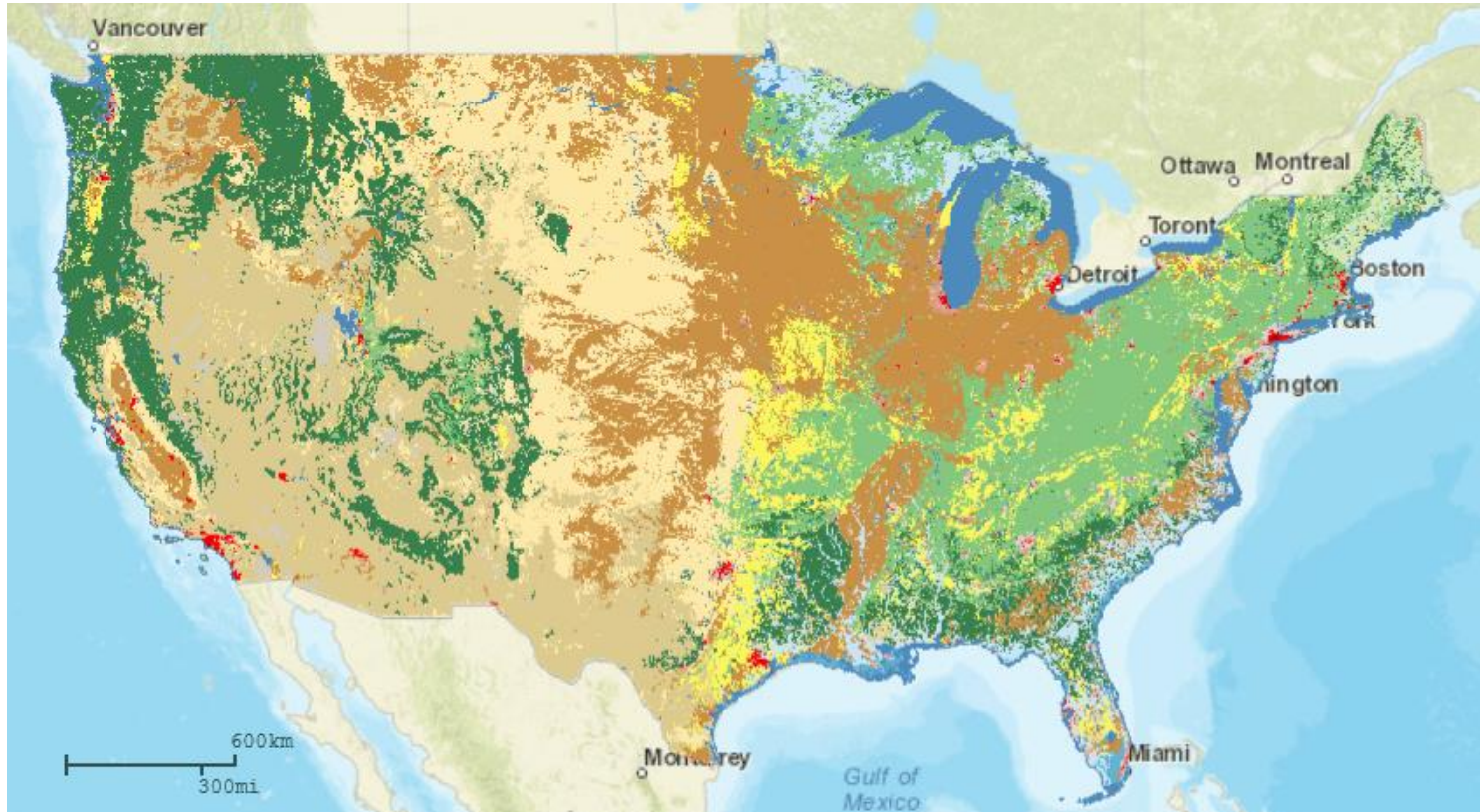
Damage ratio
applied

Insurance
terms applied

Reinsurance
terms applied

CAT XoL terms
applied

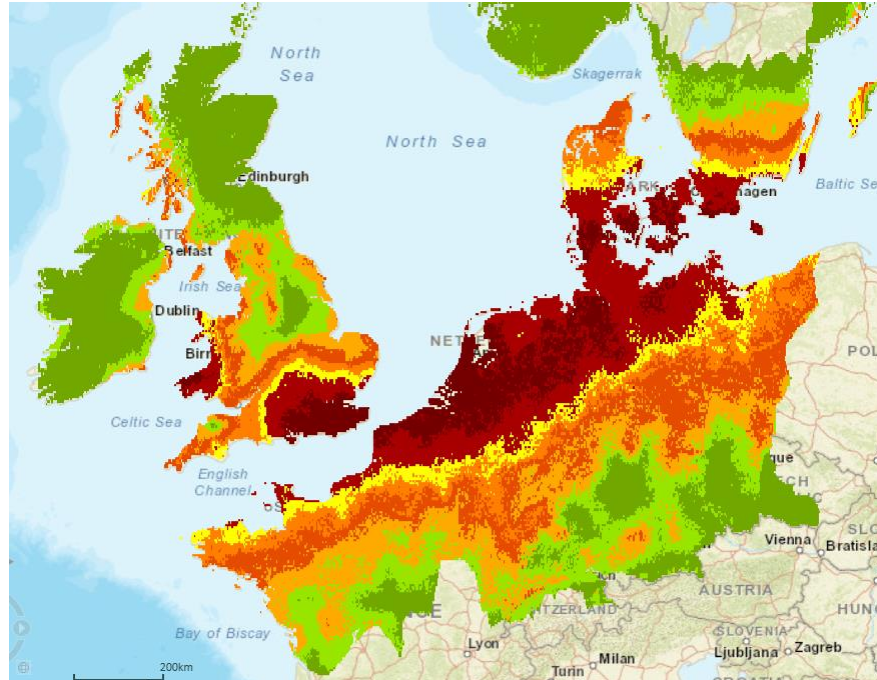
Bring in Your Own Layers and View of Risk



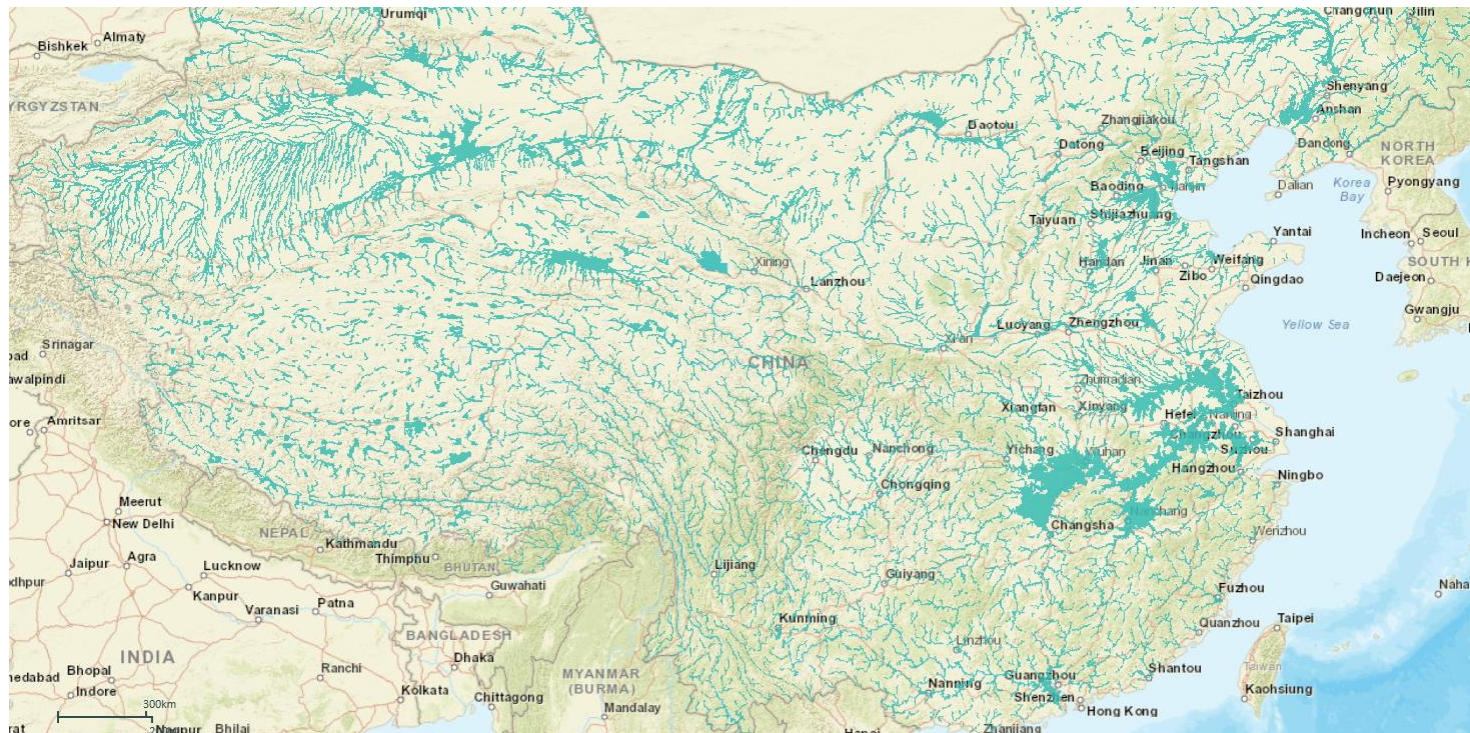
Wide Range of Layers Available in Touchstone



Wide Range of Layers Available in Touchstone



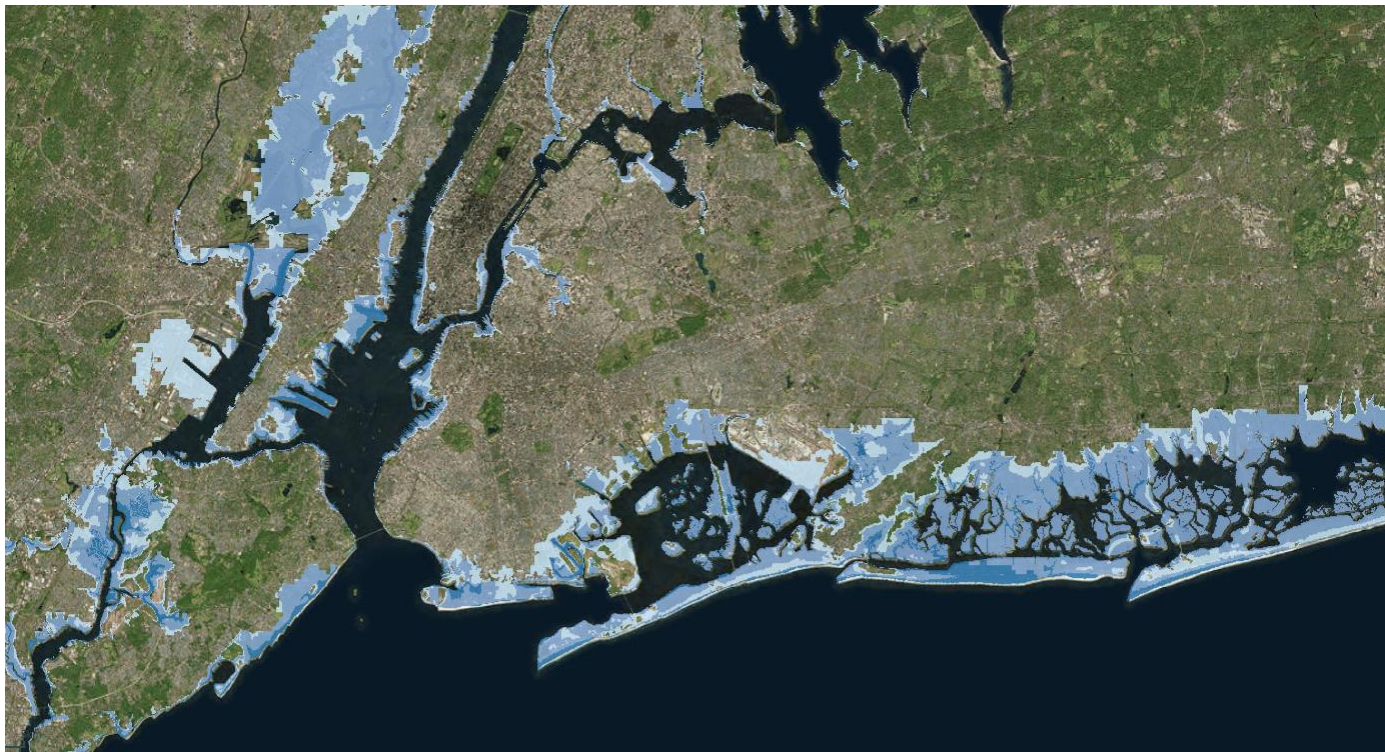
Wide Range of Layers Available in Touchstone



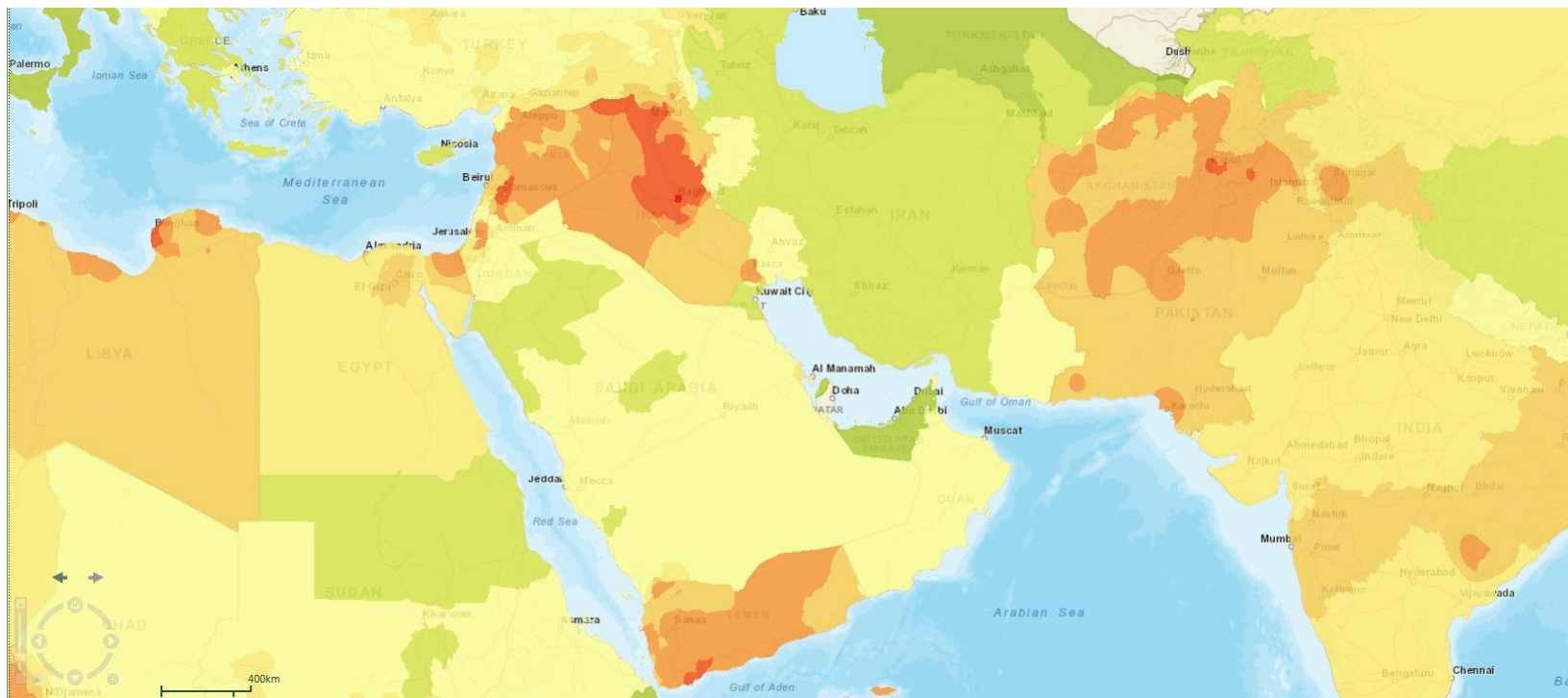
Wide Range of Layers Available in Touchstone



Wide Range of Layers Available in Touchstone



Wide Range of Layers Available in Touchstone

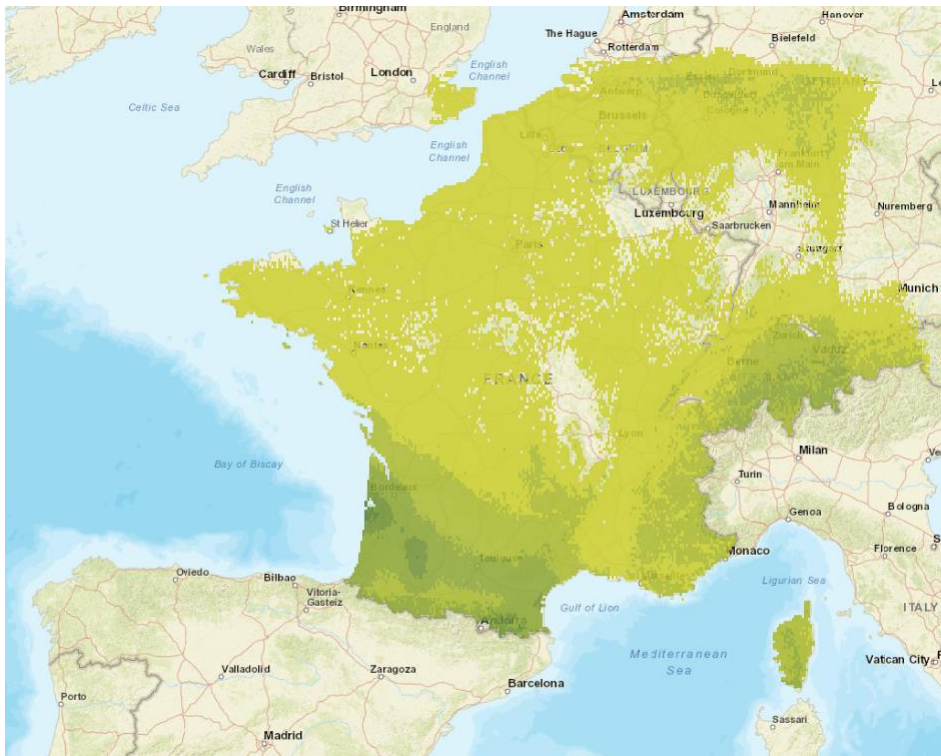




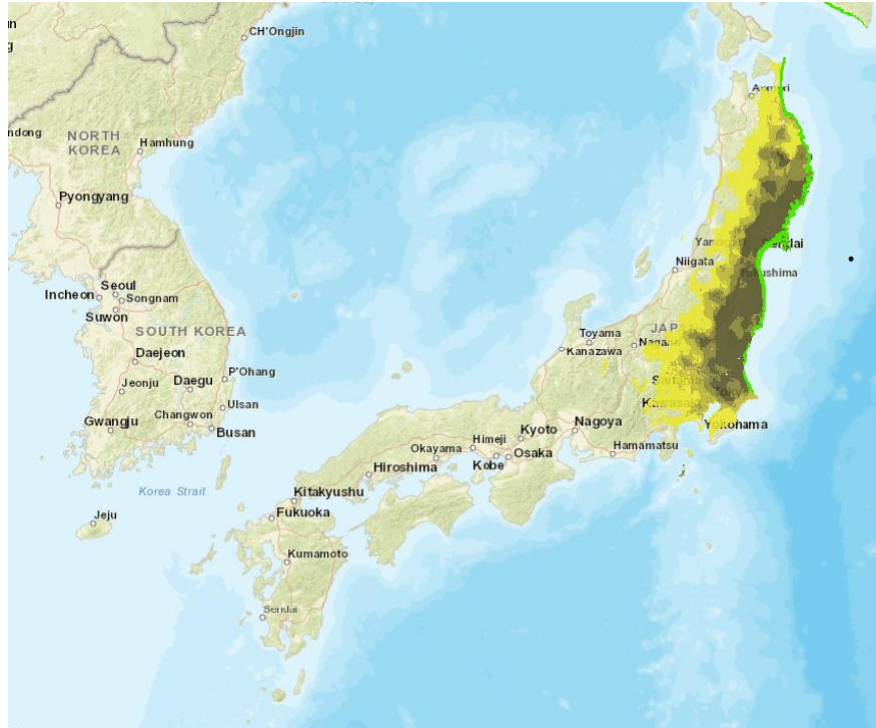
Wide Range of Layers Available in Touchstone



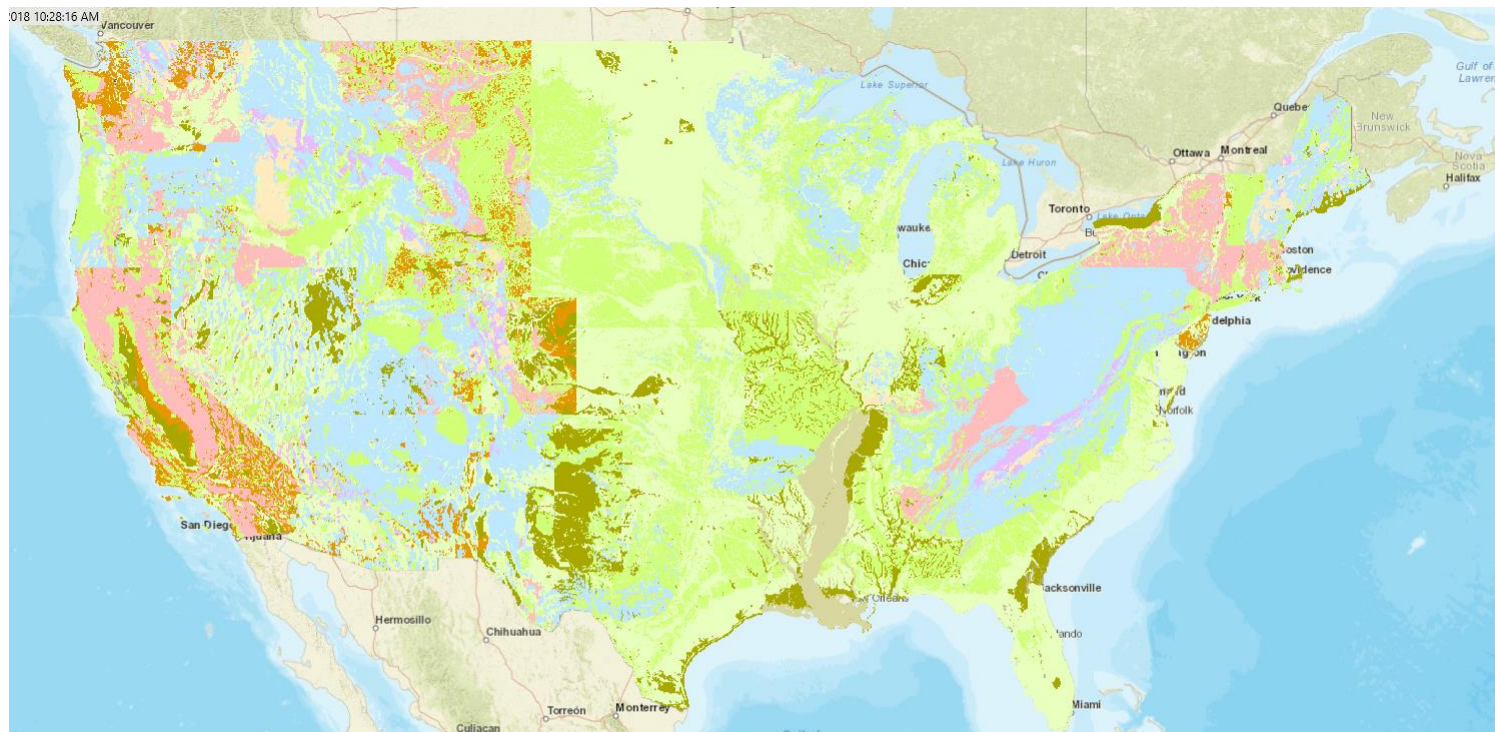
Wide Range of Layers Available in Touchstone



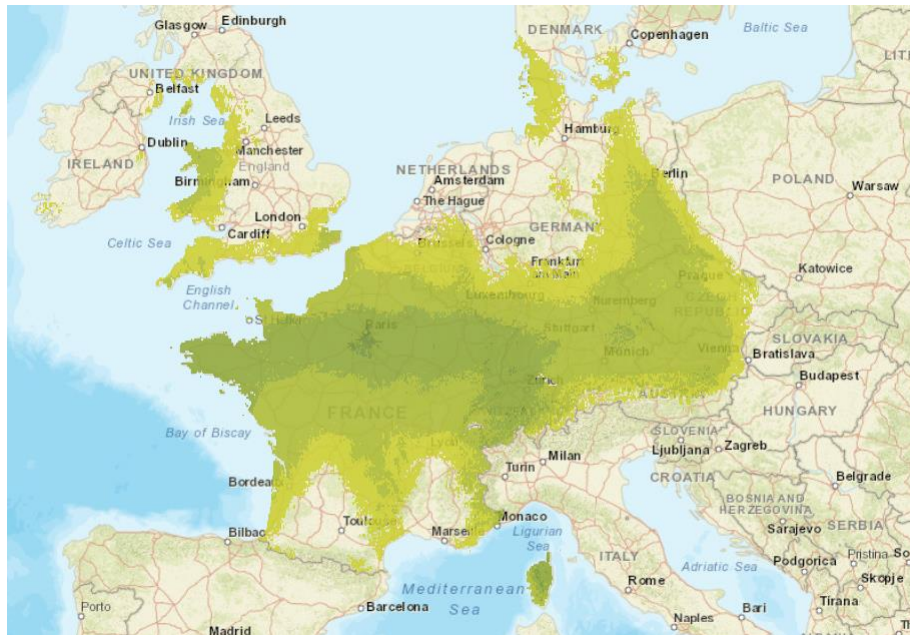
Wide Range of Layers Available in Touchstone



Wide Range of Layers Available in Touchstone



Wide Range of Layers Available in Touchstone

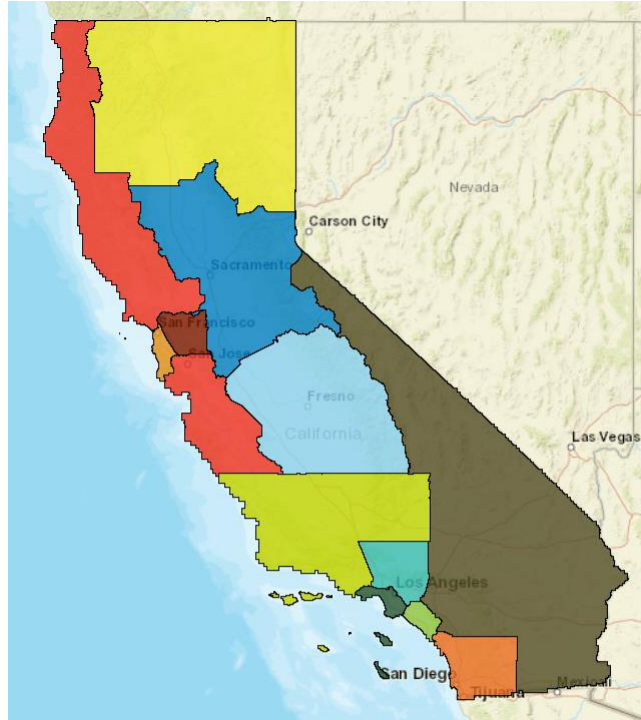


[illegible]

Wide Range of Layers Available in Touchstone



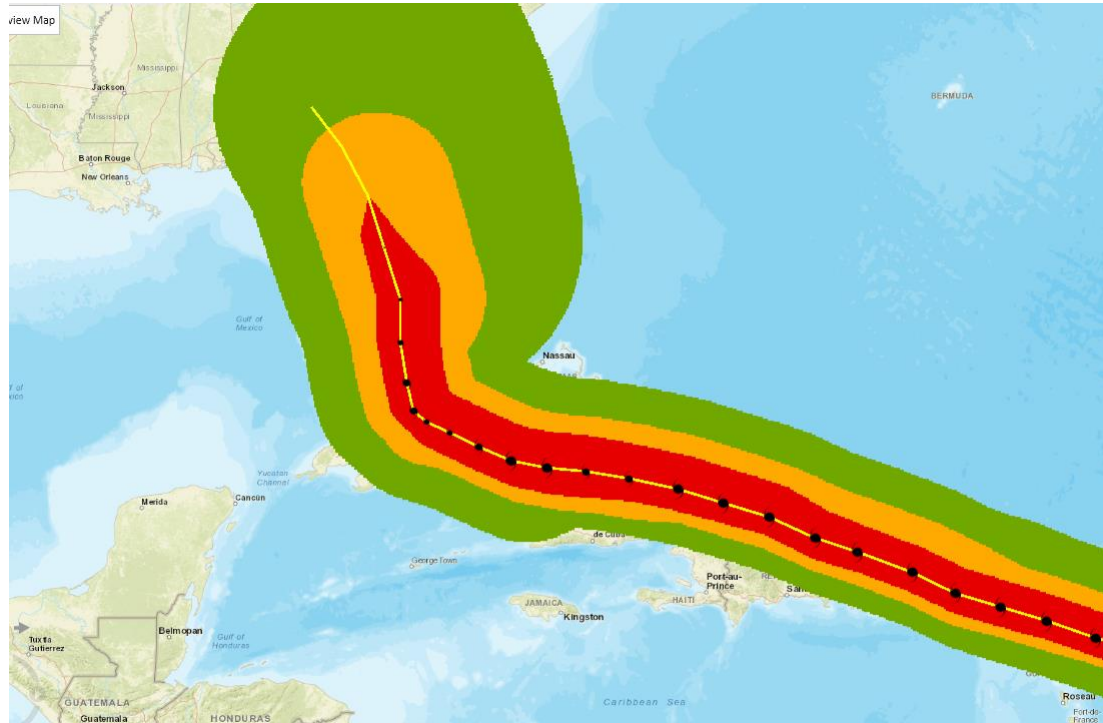
Wide Range of Layers Available in Touchstone



Wide Range of Layers Available in Touchstone



Wide Range of Layers Available in Touchstone

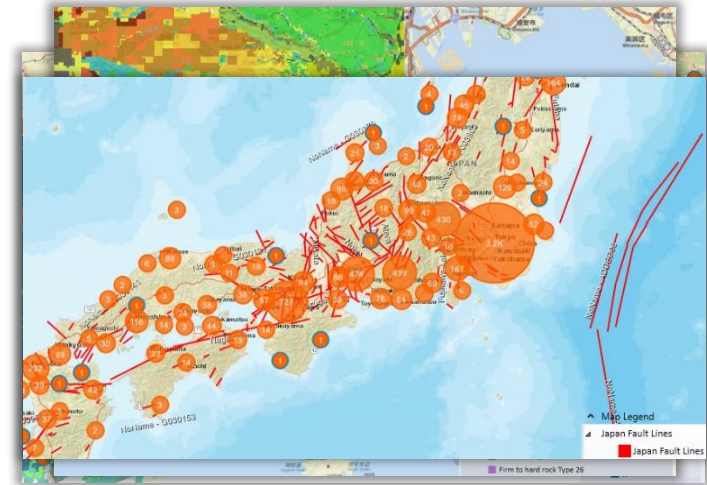


Wide Range of Layers Available in Touchstone

	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
Total	301	38	43	7	6	316	1	21	733

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



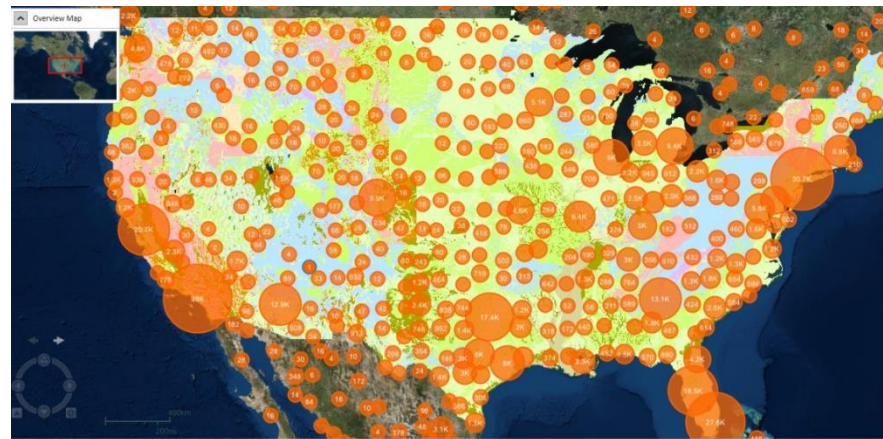
Bring in larger GIS data sets



Import and render GIS data on maps faster



Run geospatial analysis faster



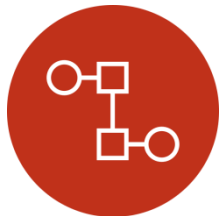
User Experience Improvements Summary



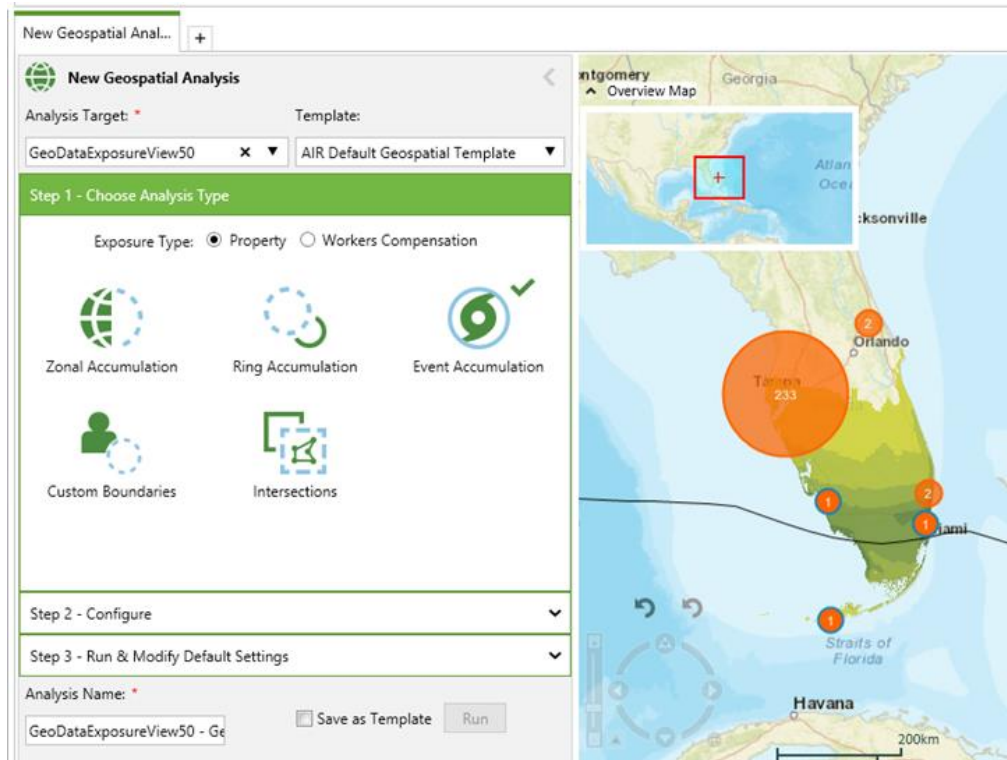
Intuitive and workflow-oriented experience



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

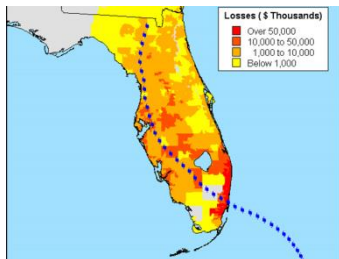
Vector	Raster	Projections
Shapefile	GeoTiff	WGS84
GeoJSON	Erdas IMG	UTM
GML	ENVI	Lambert
SQLite	RasterLite	Albers
	ArcInfo ASCII	...

Other Recent Enhancements

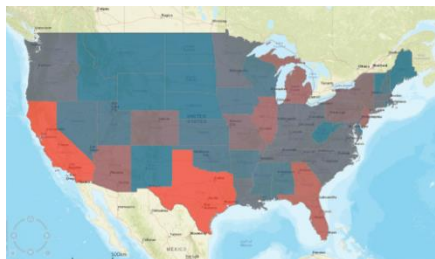
- Drawing tool
- Non-cat peril code added
- Analysis templates
- Visualization of ring centroids
- Dynamic ring analysis enhancements

Demo

Architecting for the Future



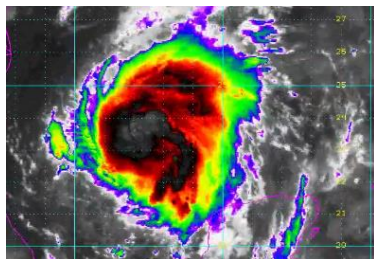
**Visualization of
Results**



**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.