

IBM's AI example

Operations Risk Insights

Used by IBM and Disaster Relief Agencies for the IBM Call for Code

For the EMDAT TAG meeting in Brussels

October 17, 2019

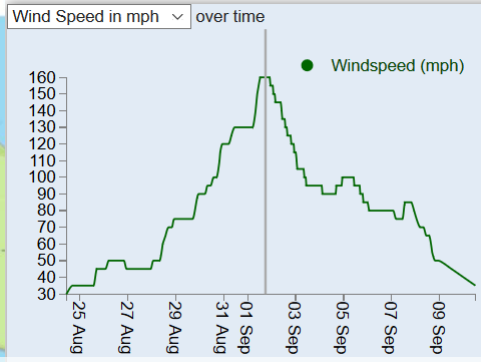
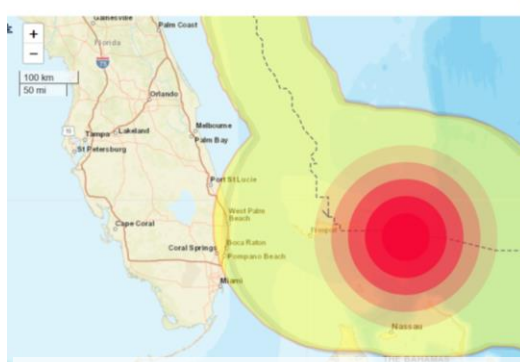
How did IBM know 8 sites, 33 data centers, 45 suppliers, 22 airports and 64 hospitals were at risk from Hurricane Dorian 3 days before it hit?

IBM Analysts got real-time Risk Insights using The Weather Company and Watson APIs on the Cloud

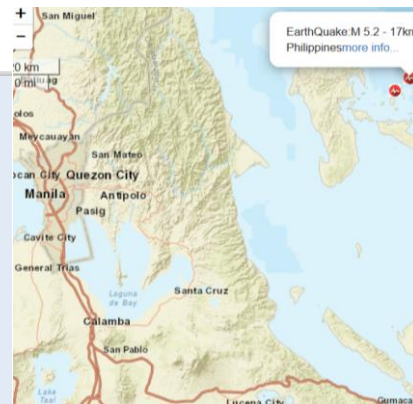
IBM Home Storms Alerts Filters Administration Chat with Watson barneid@us.ibm.com IBM

Overview Analytics Weather Tweets News Map Configurations Set My Alerts View My Alerts

Risks DORIAN-2019 Analyze September 1 2019 1 PM



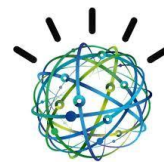
Hurricane Dorian, a Category 5 hurricane hit the Bahamas on Sep 1. 2019 and stayed for several days. It carried on into North Carolina causing widespread flooding and impact.



A magnitude 5.2 Earthquake and hit near Manila, Philippines Sep 13, 2019.



100's of trusted news sources and alert services



IBM Watson








IBM Cloud

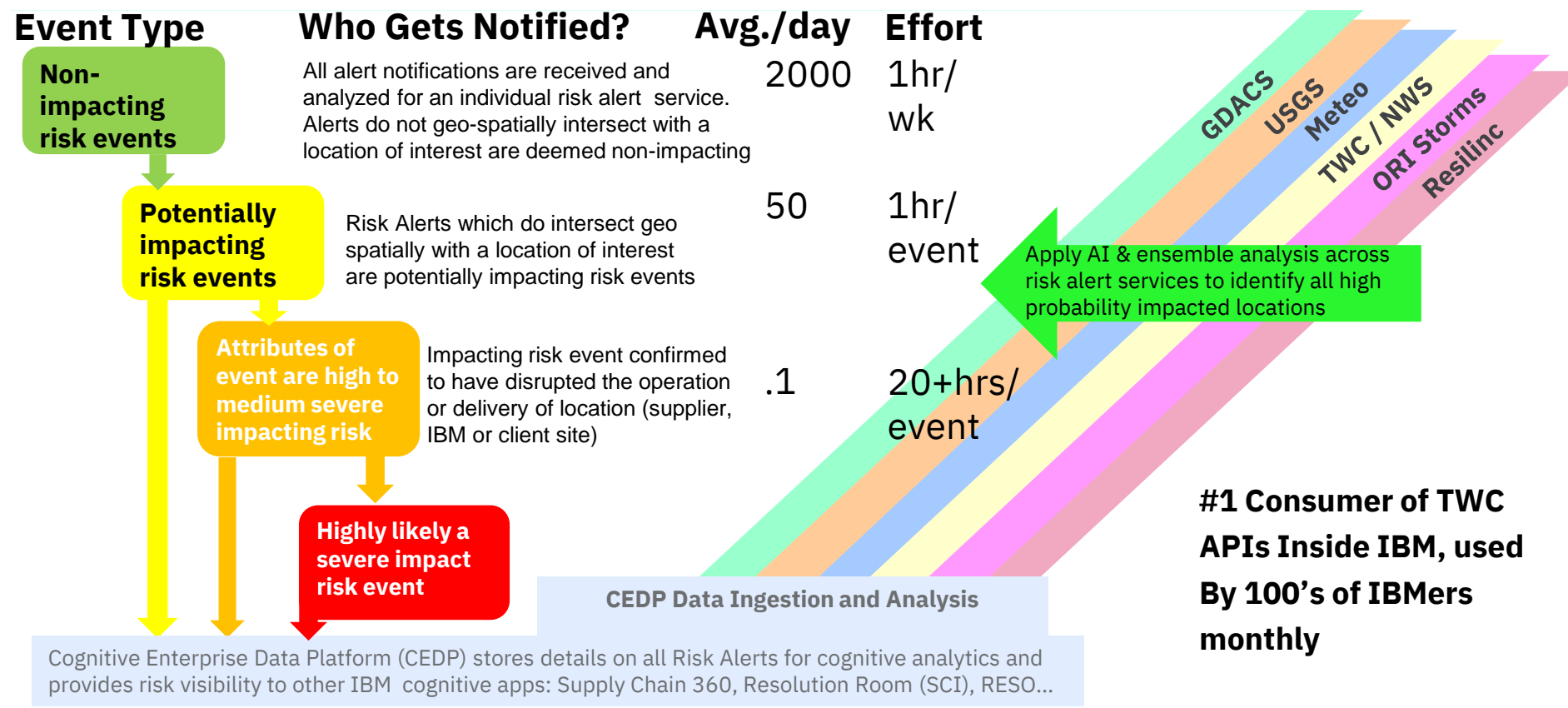
...same for Hurricanes Michael and an Earthquake in Philippines

Operations Risk Insights (ORI) on the cloud: resiliency services

Services Available on ORI for Risk Analysts and Disaster Relief Groups by Stage

Identify Risk Events	Points of Interest Alerts	Assess Severity	Mitigate / Recover	Precision Logistics
<ul style="list-style-type: none"> Consolidation of risk alerts across multiple alert services Users customize points of interest & preferences Data ingestion from trusted sources Integrate existing alert services with other APIs, eg Resilinc <p>Advanced features</p> <ul style="list-style-type: none"> Select Twitter feeds and analysis Alerts for man-made risks, eg M&A, labor strikes, factory fires, social unrest, etc.  <p><i>Future: IoT sensor tracking for assets in motion</i></p>	<ul style="list-style-type: none"> Geo-spatial analysis of which POI's are at risk from Risk events Create a user defined alert for public or private analysis Email notification of impacting event which hit user POI's <p>Advanced feature</p> <ul style="list-style-type: none"> Industry-leading weather forecasts and various condition reporting  <p><i>Future: risk identification for assets in motion</i></p> <p><i>Future: optional mobile alert notification</i></p>	<ul style="list-style-type: none"> Social media analysis & insights about selected events Apply Watson services for more insights <p>Advanced features</p> <ul style="list-style-type: none"> Watson Discovery News Geo-spatial visualization, eg population density, average income levels, historical flood zones, etc  <p><i>Future: risk severity for assets in motion</i></p>	<ul style="list-style-type: none"> Integration with Watson Supply Chain Insights & Resolution Room <p>Advanced features</p> <ul style="list-style-type: none"> Mined resolution too for disaster recovery playbook Machine Learning insights from 100+ years of historical disaster data record analysis  <p><i>Future: integration with ground transportation data for road & traffic conditions</i></p>	<ul style="list-style-type: none"> IoT sensors for GPS, Shake & Vibration & Climate. Alerts set when outside control limits High value shipments monitored from plant to client location Sensor re-use <p>Advanced features</p> <ul style="list-style-type: none"> Predictive time of arrival  <p><i>Future: integration between ORI, IPS and Cognitive Supply Chain</i></p>

ORI – alert service analysis & machine learning on CEDP



ORI – summary

An automated, comprehensive and Watson-powered Alert Service that assesses supply chain risk events to identify those posing the greatest threat of impact

Challenge:

Global supply chains subject to high costs from missing a serious threat or overreacting to a minor one.

Multiple separate Risk Alert data feeds, warnings, watches and advisories are impossible for an individual to synthesize and assess.

Unified.

150 data sources monitored hourly to synthesize **millions of records in real-time**

Analyze risk-event impact to **13,000+ supply chain sites, data centers, and airports** worldwide

Quick & easy.

Single, constantly-updating view of world events and IBM locations to **instantly notify affected sites**

Smart.

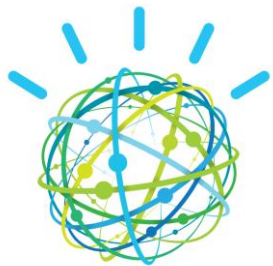
Watson tells us **when to respond or ignore**

\$12 million gain

in efficiency & cost avoidance in two years

The Weather Company
An IBM Business

#1 internal user at IBM



2018 Disaster Recovery Call for Code Semifinalist

and

2019 Call for Code IBM 'Peoples Choice' winner and overall second place finisher

**COMMIT
TO THE
CAUSE.**

IBM WILL SEND A COMPLETE
MESSAGING AND ANALYTICS KIT TO
DISTRIBUTE TO YOUR DEVELOPERS
- ASKING THEM TO PARTICIPATE

YOUR ORGANIZATION WILL BE SOCIALIZED
AND RECOGNIZED AS A COMPANY WHO
COMMITTED TO THE CAUSE. YOUR DEVELOPERS
RECEIVE A PERSONAL THANK-YOU FROM OUR
HUMANITARIAN AFFILIATE

PASS TO YOUR DEVELOPERS THE KEY
MESSAGE OF CALL FOR CODE - ENCOURAGE
THEM TO BECOME SKILLED IN CLOUD, AI,
DATA, AND BLOCKCHAIN TECHNOLOGIES

EVERY COMPANY WHO BELIEVES TECHNOLOGY CAN
OVERCOME TRAGEDY MUST PARTICIPATE IN CALL FOR CODE
VISIT callforcode.org/comm

**CALL
FOR
CODE®** 20
19



CALL FOR CODE



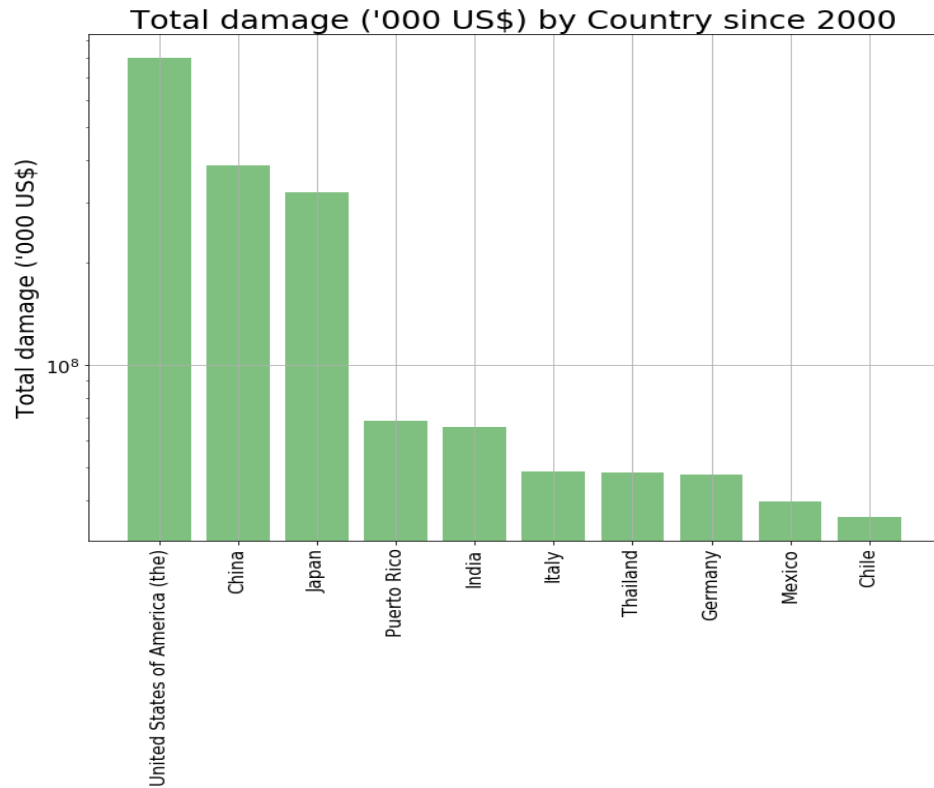
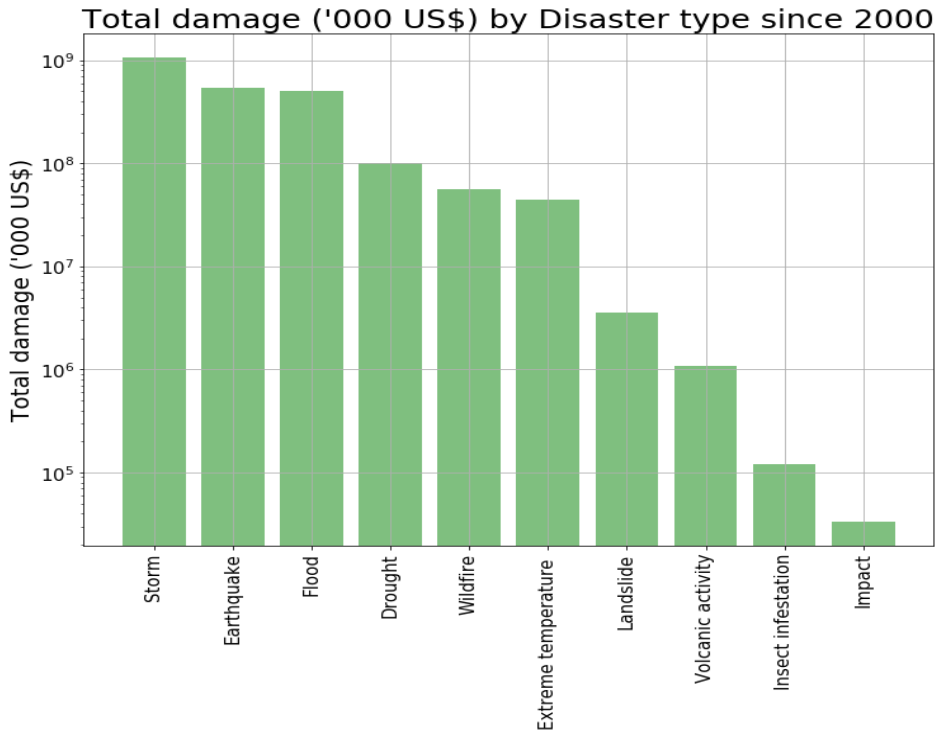


Relevant EMDAT data insights - and many irrelevant data insights

EM-DAT: The Emergency Events Database - Université catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium



Economic Impact by Disaster and Country since 2000



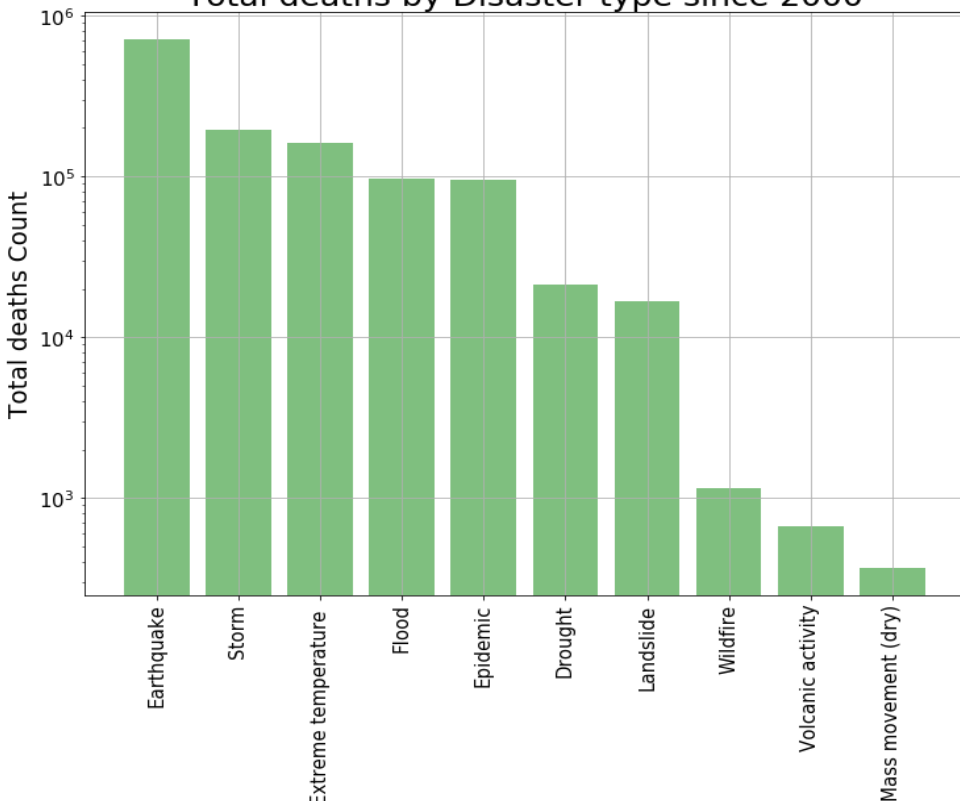
EM-DAT: The Emergency Events Database - Université catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium

>\$1 trillion

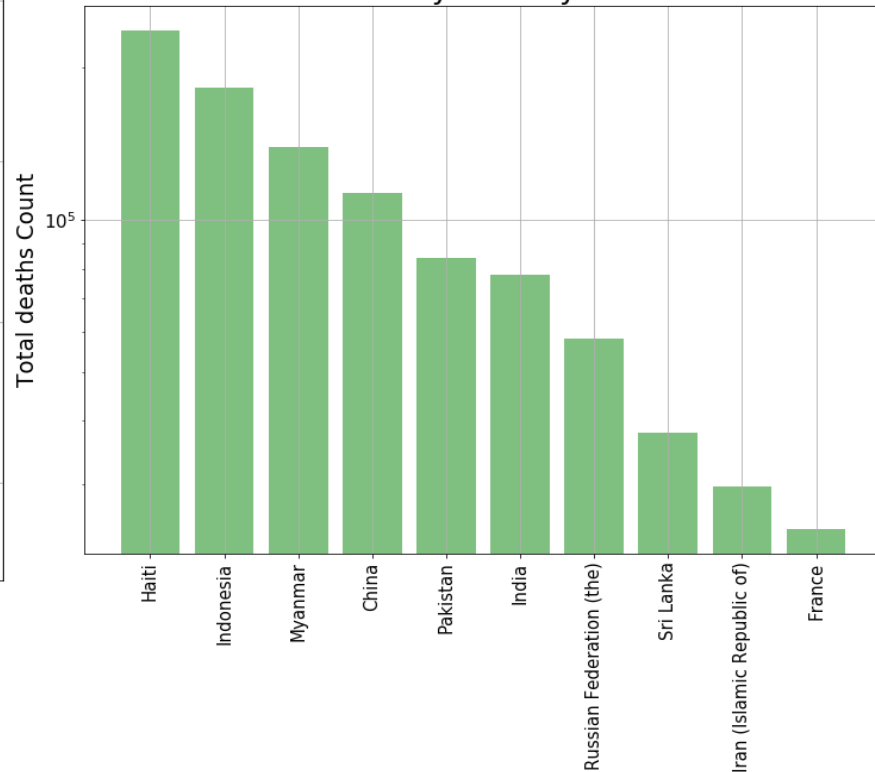


Deaths by Disaster type and Country since 2000

Total deaths by Disaster type since 2000



Total deaths by Country since 2000



EM-DAT: The Emergency Events Database - Université catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium

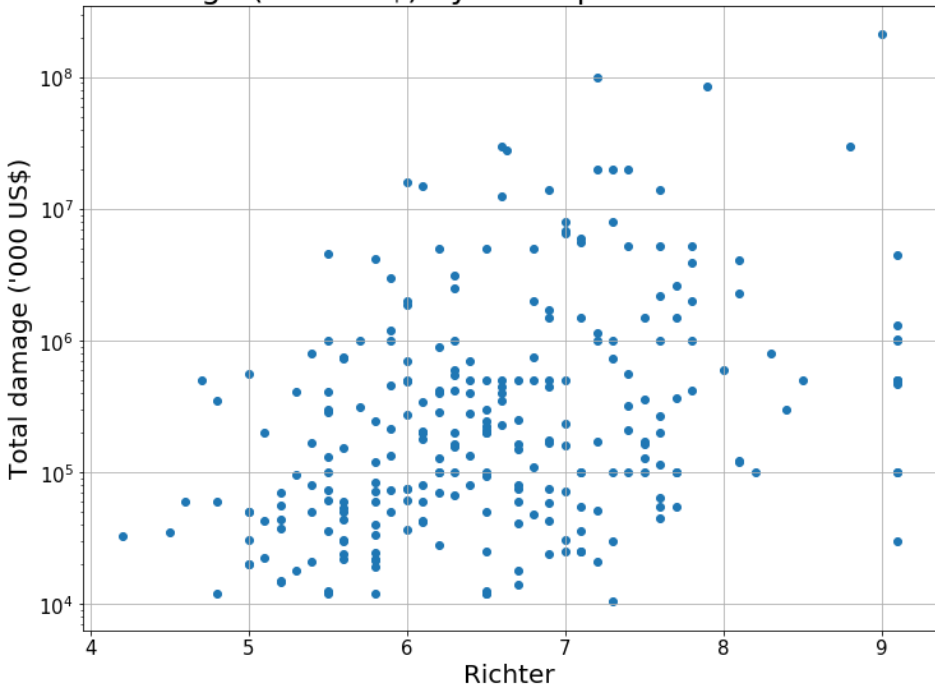
>1 million



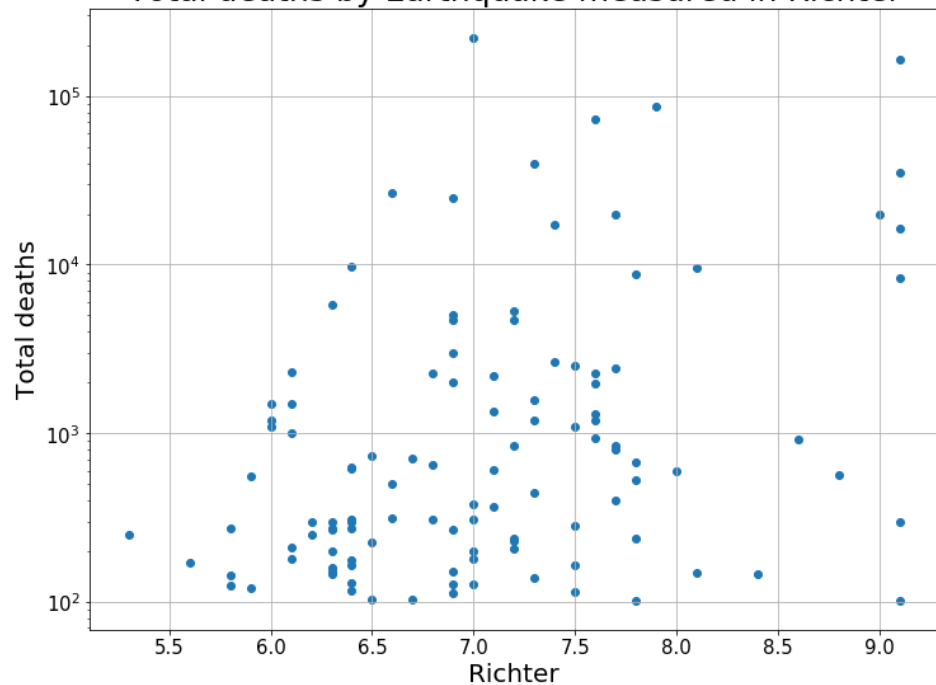
Earthquakes Economic Losses and Deaths



Total damage ('000 US\$) by Earthquake measured in Richter



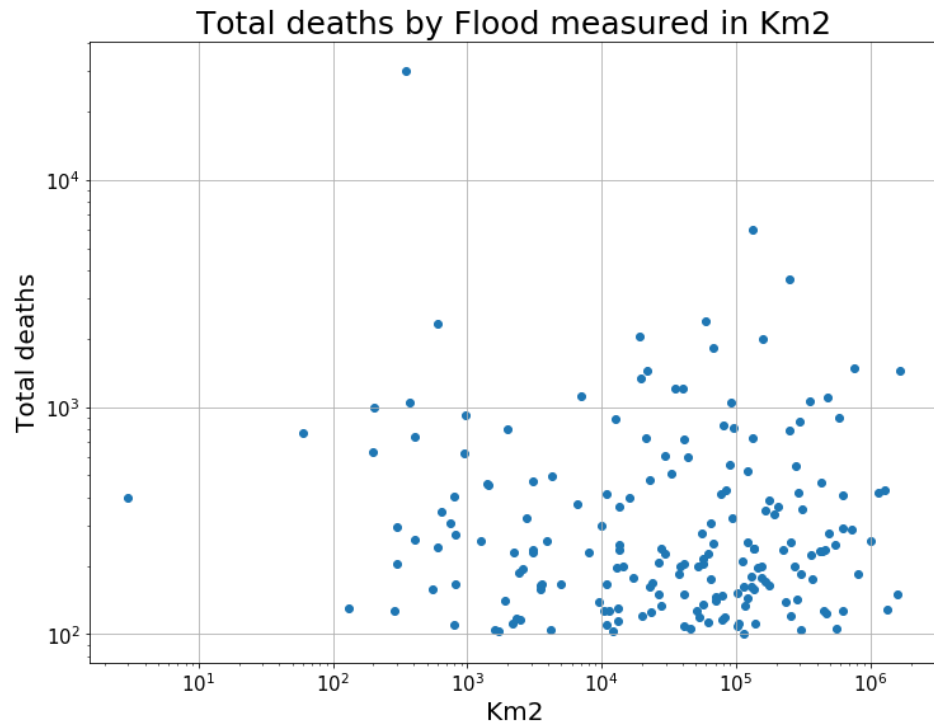
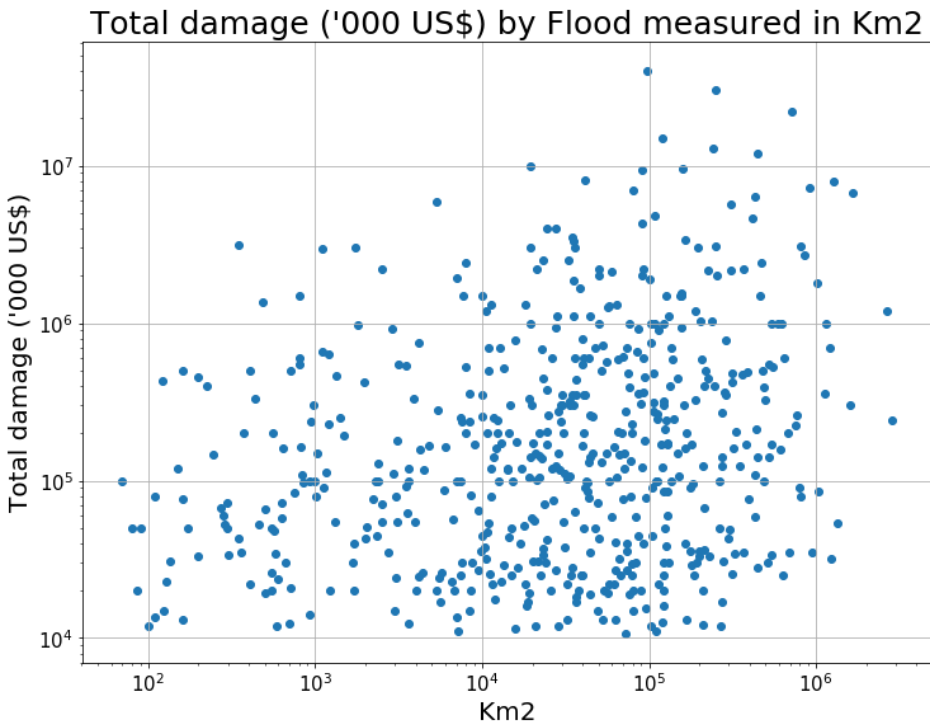
Total deaths by Earthquake measured in Richter



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Flooding Economic Losses and Deaths

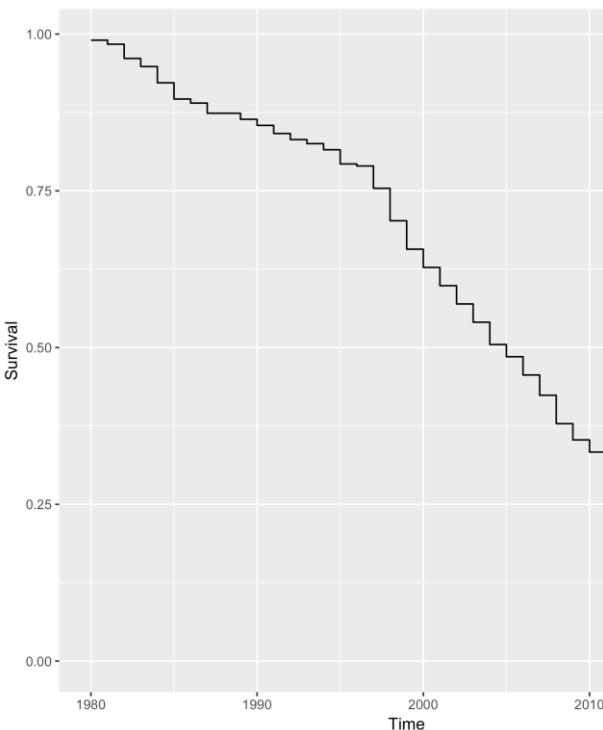


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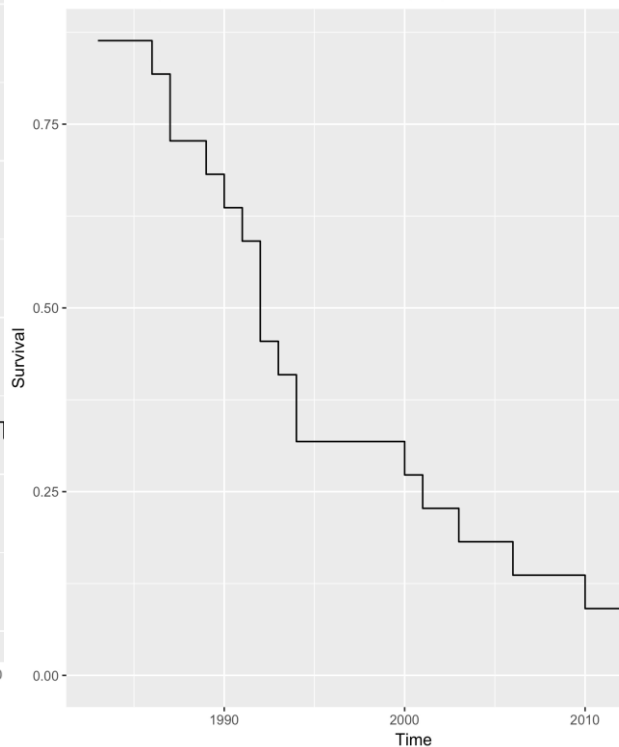


US Risk Cumulative Hazard Charts: Insurance method

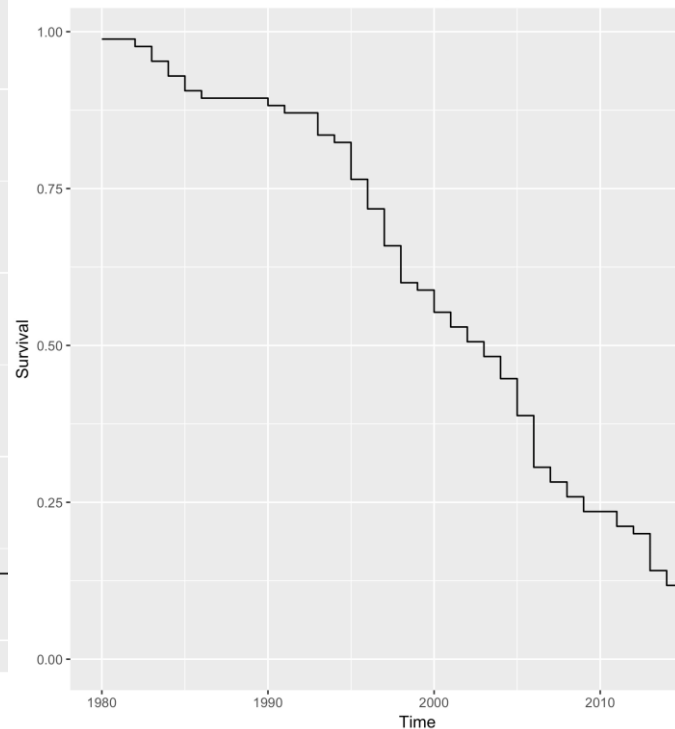
For country: United States of America (the) , For the disaster: Storm



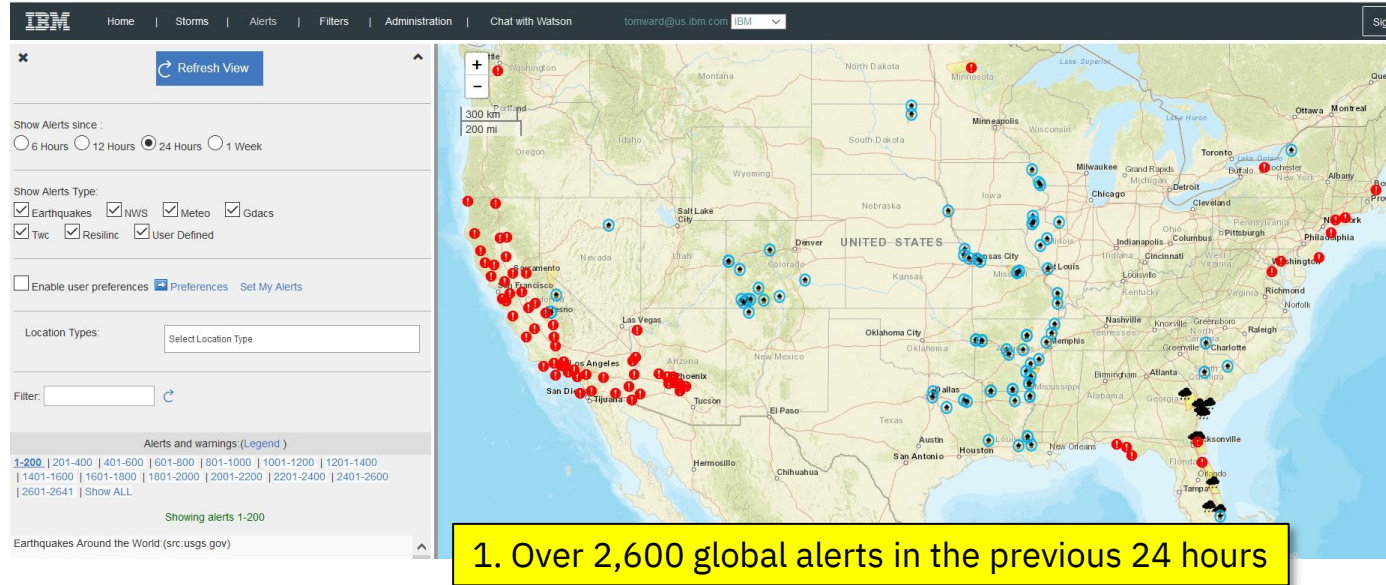
For country: United States of America (the) , For the disaster: Earthquake



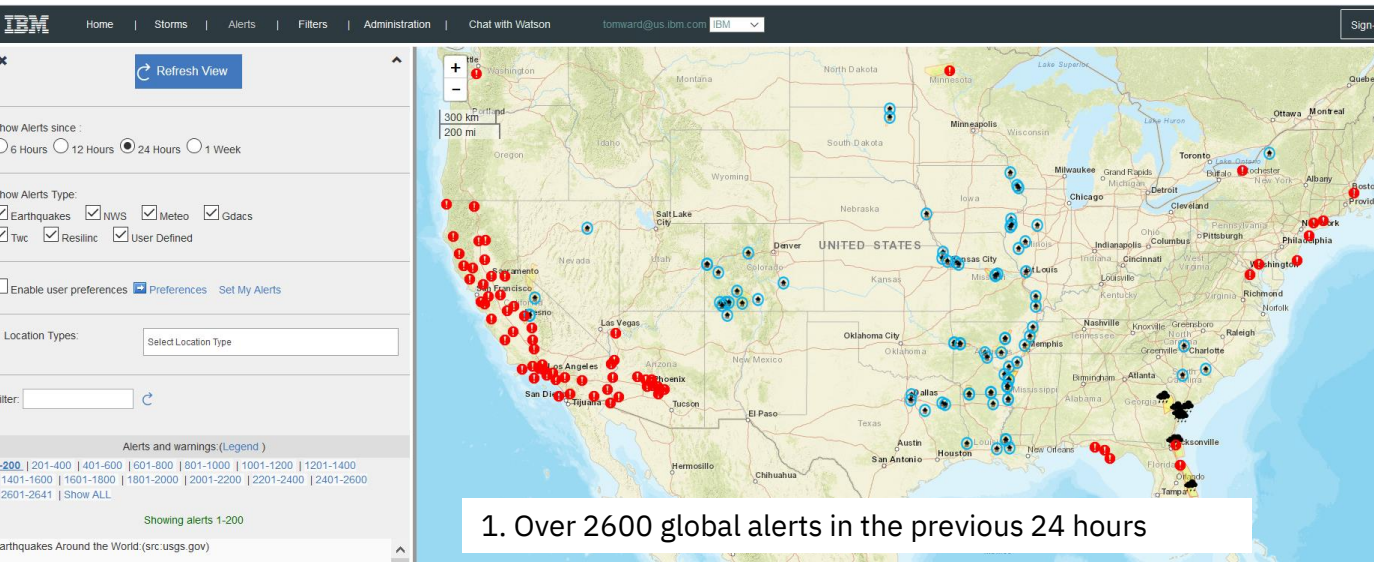
For country: United States of America (the) , For the disaster: Flood



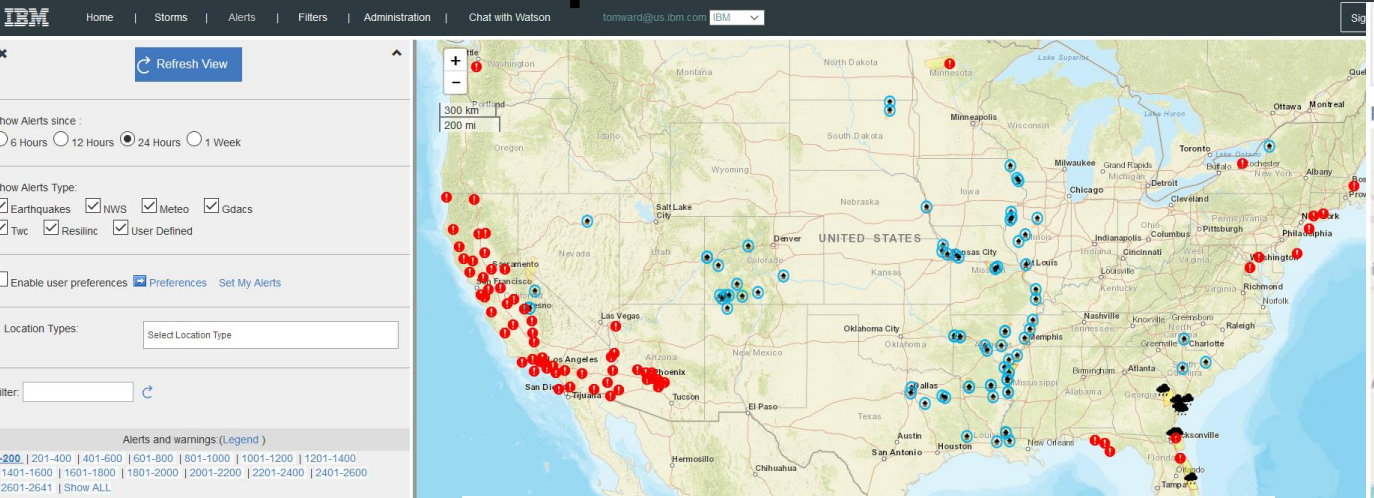
ORI disaster relief provider – use case 1



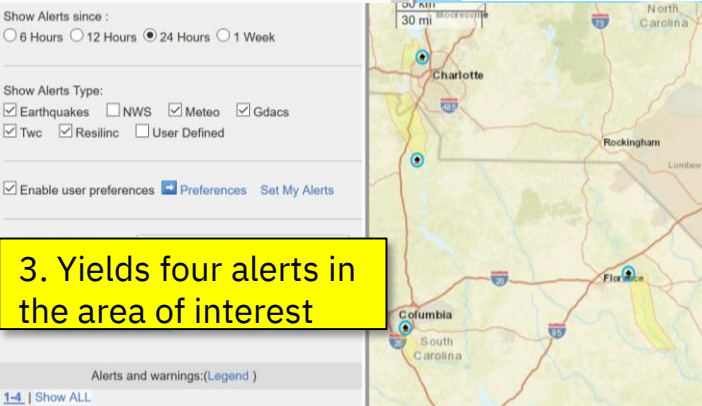
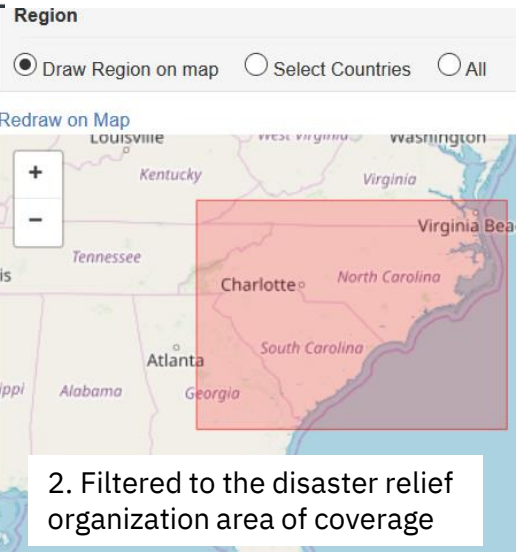
ORI disaster relief provider – use case 1



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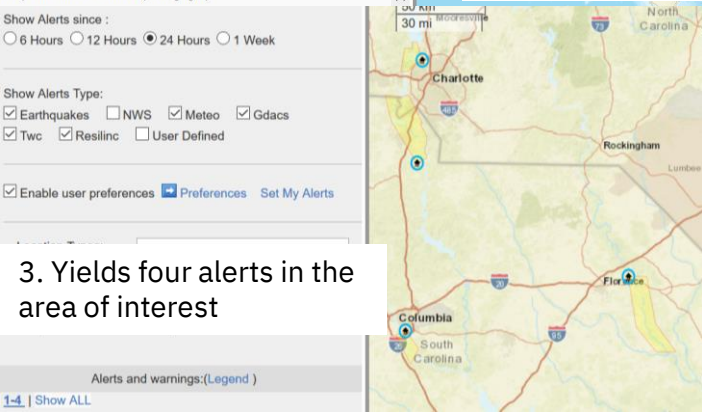
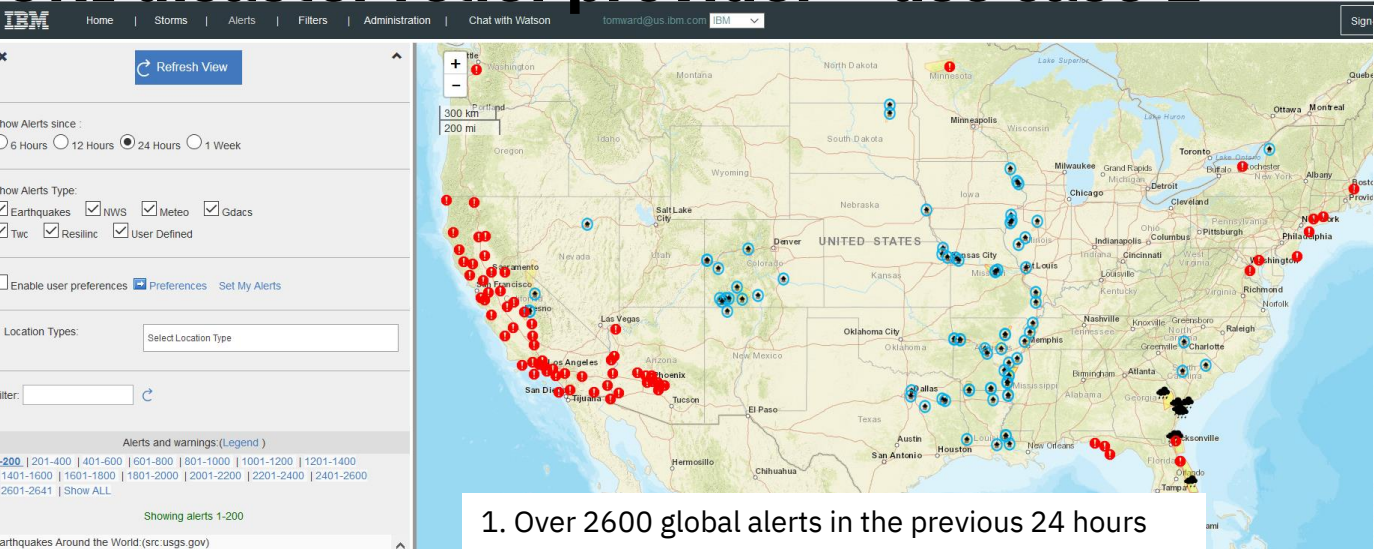


1. Over 2600 global alerts in the previous 24 hours



3. Yields four alerts in the area of interest

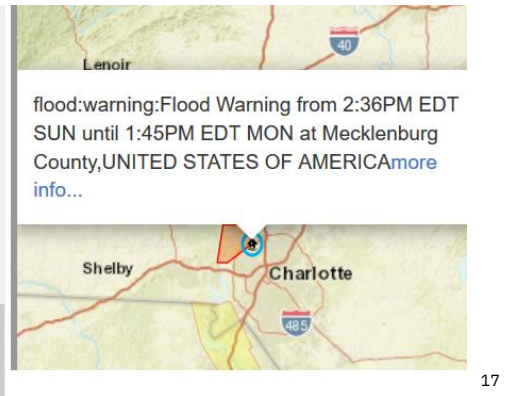
ORI disaster relief provider – use case 1



COLUMBIA HAS ISSUED A * FLOOD WARNING FOR THE CONGAREE RIVER AT CAROLINA EASTMAN * UNTIL THURSDAY MORNING...OR UNTIL THE WARNING IS CANCELLED * AT 2 AM THURSDAY THE

4. Of which one alert impacts >1,000 people per square km

* warning - THE NATIONAL WEATHER SERVICE IN GREENVILLE-SPARTANBURG HAS ISSUED A * FLOOD WARNING FOR... NORTHWESTERN MECKLENBURG COUNTY IN THE PIEDMONT OF NORTH CAROLINA... NORTHEASTERN GASTON COUNTY IN THE PIEDM...[more info](#). [35,-80][Population(pop./km²): 1037.82]



ORI disaster relief provider – use case 1

☒ Enable user preferences [Preferences](#) [Set My Alerts](#)

Location Types:

✖ USA Airports

✖ Hospital

5. The nearest hospitals & airports are identified to target relief supplies

Alerts and warnings: (Legend)

1-4 | [Show ALL](#)

Showing alerts 1-4

Company: NOVANT HEALTH HUNTERSVILLE
MEDICAL CENTER IBM/hospital/35.406467
/-80.860016/10030 GILEAD ROAD
HUNTERSVILLE MECKLENBURG NC 28078

Region

☒ Draw Region on map ☐ Select Countries ☐ All

Redraw on Map

+

-

2. Filtered to the Disaster Relief Workers Area of coverage

Show Alerts since :
☐ 6 Hours ☐ 12 Hours ☒ 24 Hours ☐ 1 Week

Show Alerts Type:
☒ Earthquakes ☐ NWS ☒ Meteo ☒ Gdacs
☒ Twc ☒ Resilinc ☐ User Defined

☒ Enable user preferences [Preferences](#) [Set My Alerts](#)

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flood:warning:Flood Warning from 2:36PM EDT SUN until 1:45PM EDT MON at Mecklenburg County,UNITED STATES OF AMERICAmore info...