



AIDR: Artificial Intelligence for Digital Response

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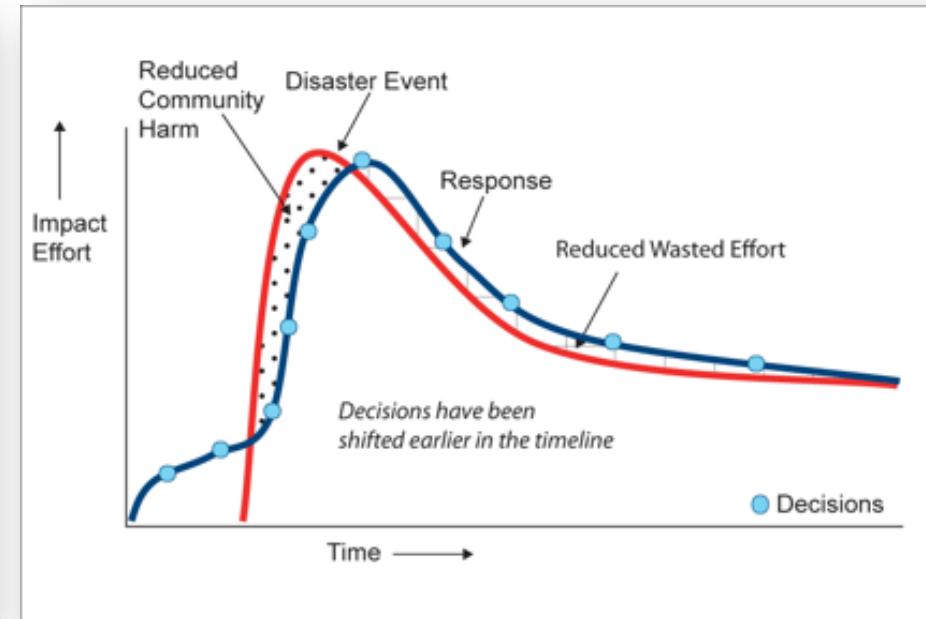
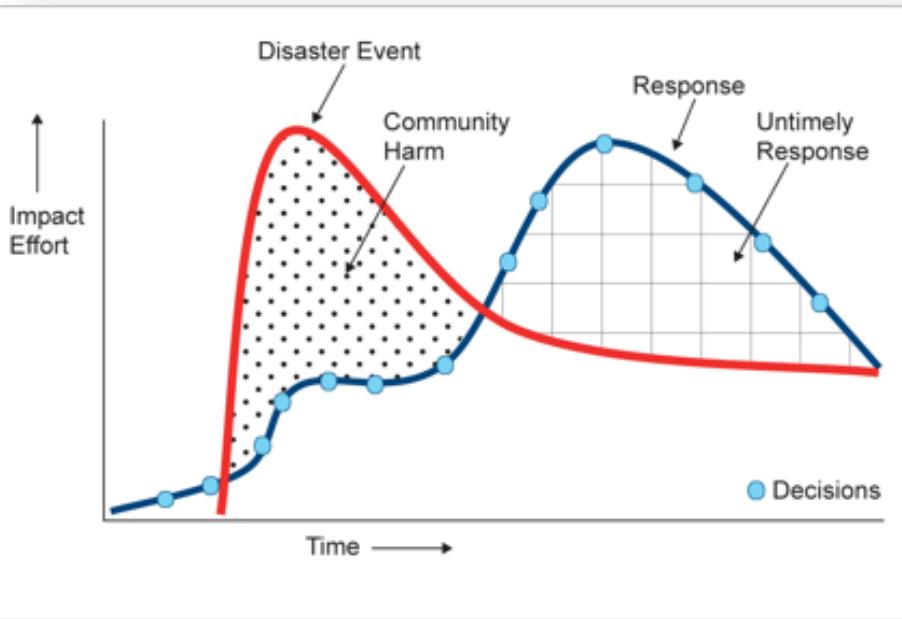
Partners & Users:



New York (Suffolk)
Emergency Management Dept.



Towards Rapid Disaster Response



- ↓
- **Delayed decision-making**
 - **Delayed crisis response**
 - **High community harm**

Target

- ↓
- **Early decision-making**
 - **Rapid crisis response**
 - **Low community harm**

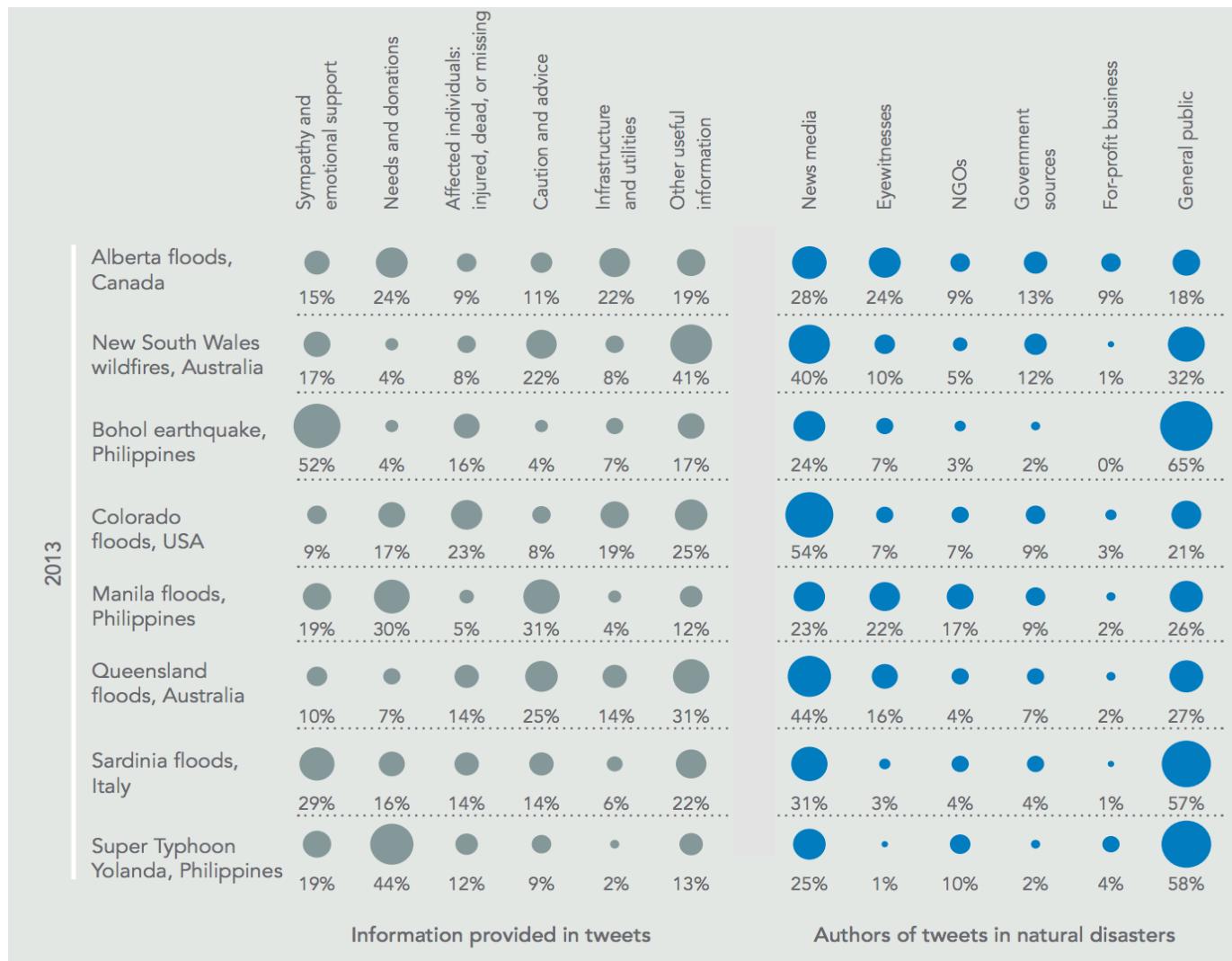
Disaster Data Analysis on Twitter

Information types

- Injured or dead people
- Need and donations
- Infrastructure damage
- Sympathy & support
- Other useful information

Information sources

- News media
- Eyewitness
- General public
- Government sources
- ...



Twitter data from **13 crises**; Analyzed over **100,000 tweets**; Information **types and sources**

Source: Qatar Computing Research Institute - Published in World Humanitarian Data and Trends 2014 (UN OCHA)

Twitter Breaks Events Faster

Boston Bombing

First report on Twitter



Dan Lampariello
@WBBJ7Dan

Explosion at copy

9:50 PM - 15 Apr 2013

↳ 1,943 ⚡ 187

[Follow](#)

After 1 minute

Pure Applesauce
@stackii

[Follow](#)

An explosion just went off in downtown Boston. Spectators fleeing the #bostonmarathon course.

9:51 PM - 15 Apr 2013

↳ 79 ⚡ 11

Pure Applesauce
@stackii

[Follow](#)

I think a bomb just went off in Boston. Can't tell. Can smell smoke. Emergency vehicles everywhere.

instagram.com/p/Yltk1gTIUJ/

9:53 PM - 15 Apr 2013

↳ 308 ⚡ 21

After 2 minutes

Fox Sports 1380 KRKO
@KRKO1380

[Follow](#)

BREAKING: Per our man on the ground at the Boston Marathon, @toobladogs, there was an explosion. More to follow.

9:52 PM - 15 Apr 2013

↳ 153 ⚡ 3

Time-Critical Analysis of Social Media

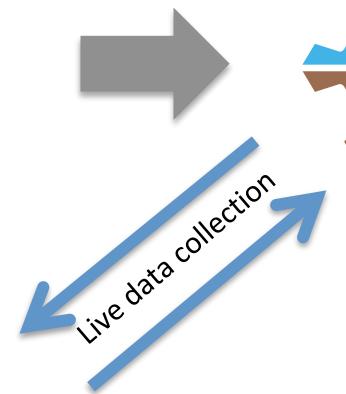
Disaster event (earthquake, flood)



AIDR deployment



AIDR uses machine learning techniques to process social media messages and images



Critical information



- Urgent needs
- Damage assessment
- Other useful info

Relief operations

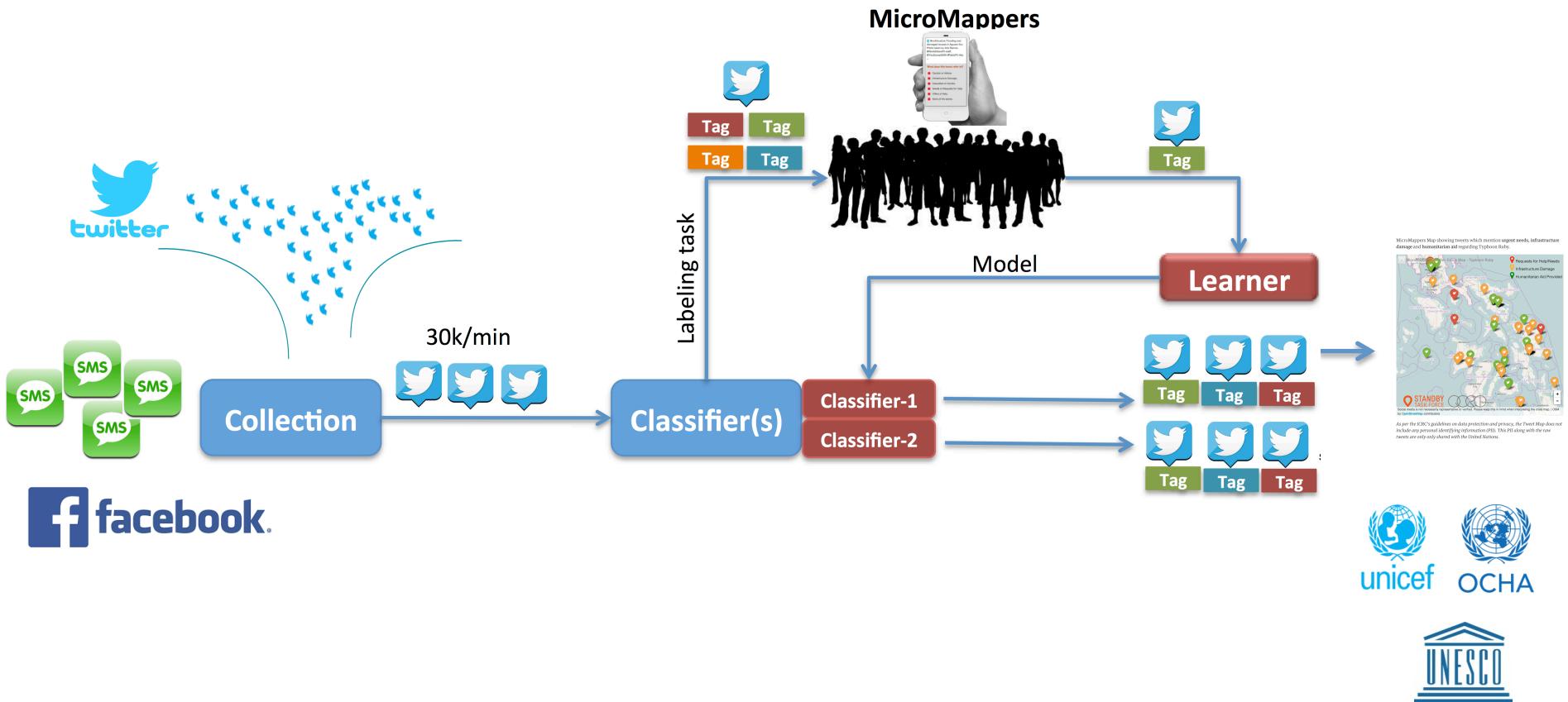


Humanitarian organizations and local administration



How AIDR Works?

Combining Human and Machine Intelligence

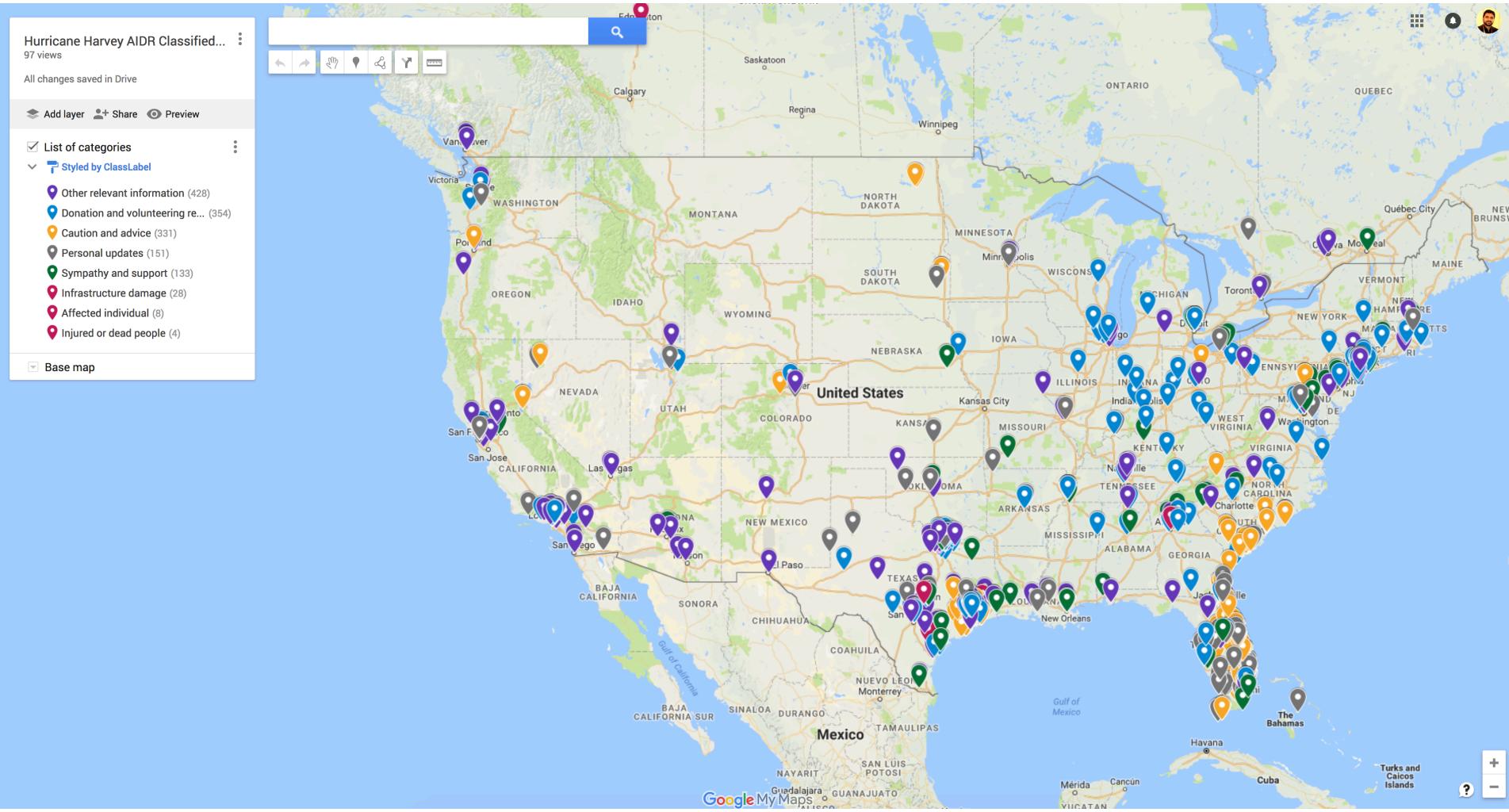


AIDR Usage Stats

- AIDR is publicly accessible **24/7** – <http://aidr.qcri.org/>
- More than **3,000 users** have registered since 2013
- AIDR has been used for over **3,500 small to large-scale emergencies** (including man-made and natural disasters)
- AIDR has collected more than **1,007,944,174 tweets** so far

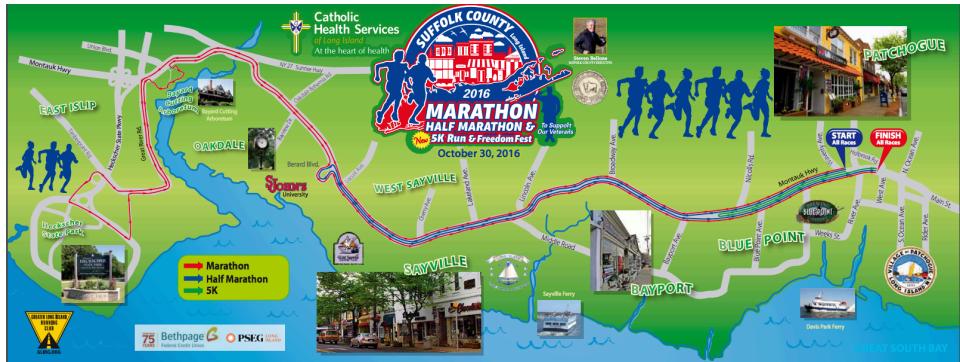
Hurricane Harvey 2017

A map of geo-tagged tweets indicating **useful reports** (e.g., injured people, damages) by AIDR text classifiers. AIDR collected and analyzed **4 million tweets**.



Suffolk County New York Marathon 2015

Marathon surveillance through social media



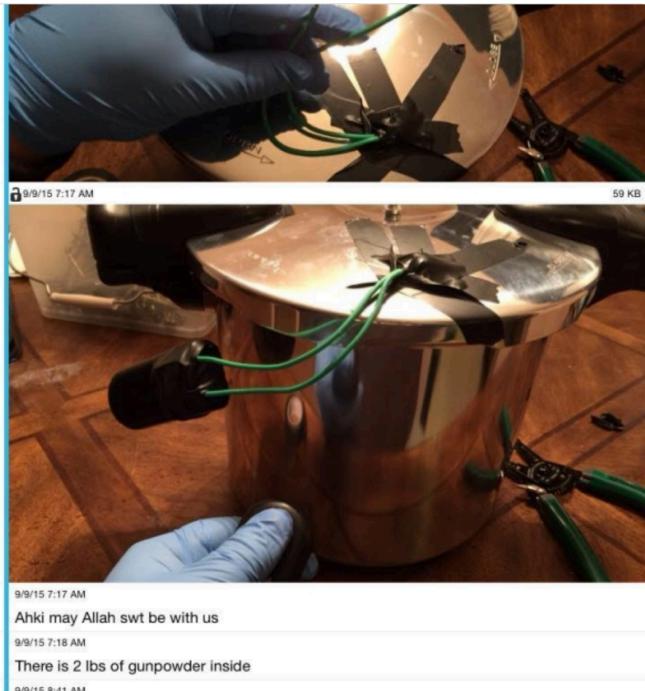
Twitter



 Refaatesque
@ThisIsGaZa

Follow

device appears to resemble a "pressure cooker bomb", similar to the type of explosive used in Boston Marathon attack



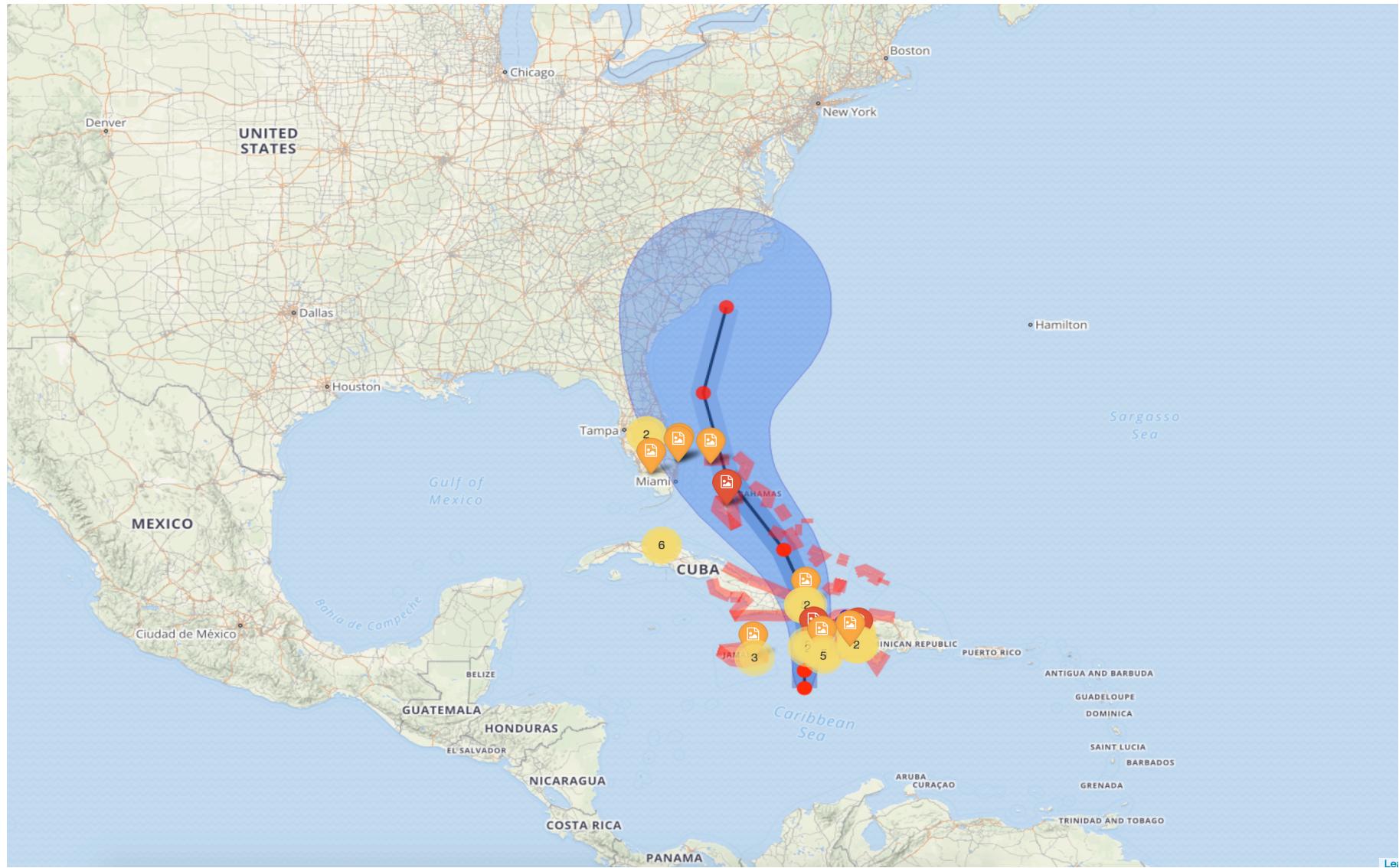
11:39 AM - 11 Sep 2015

14 Retweets 3 Likes



Hurricane Matthew 2016

A map of geo-tagged images showing severe and mild damage



Hurricane Matthew 2016

A map of geo-tagged images showing **severe and mild damage**



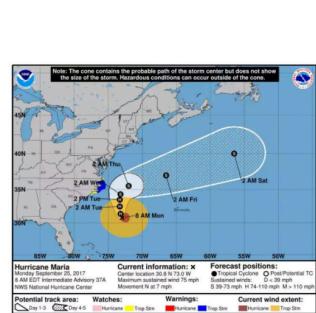
“A picture is worth a thousand words.”

Hurricane Matthew Nepal Earthquake Ecuador Earthquake



Hurricane Maria 2017 Damage Assessment using AIDR

Automatic damage severity assessment --- SEVERE damage, MILD damage, NO damage



NO DAMAGE (score: 0.86)



NO DAMAGE (score: 0.97)



NO DAMAGE (score: 0.90)



NO DAMAGE (score: 0.44)



NO DAMAGE (score: 0.84)



NO DAMAGE (score: 0.92)



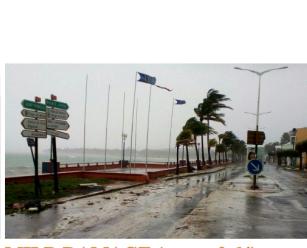
MILD DAMAGE (score: 0.49)



MILD DAMAGE (score: 0.73)



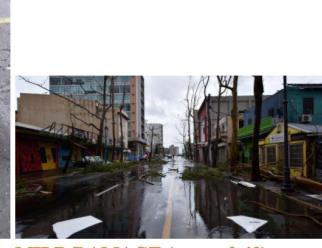
MILD DAMAGE (score: 0.46)



MILD DAMAGE (score: 0.64)



MILD DAMAGE (score: 0.59)



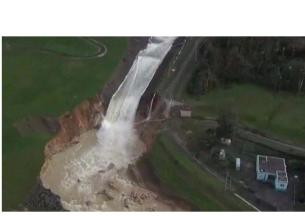
MILD DAMAGE (score: 0.42)



SEVERE DAMAGE (score: 0.56)



SEVERE DAMAGE (score: 0.37)



SEVERE DAMAGE (score: 0.55)



SEVERE DAMAGE (score: 0.45)

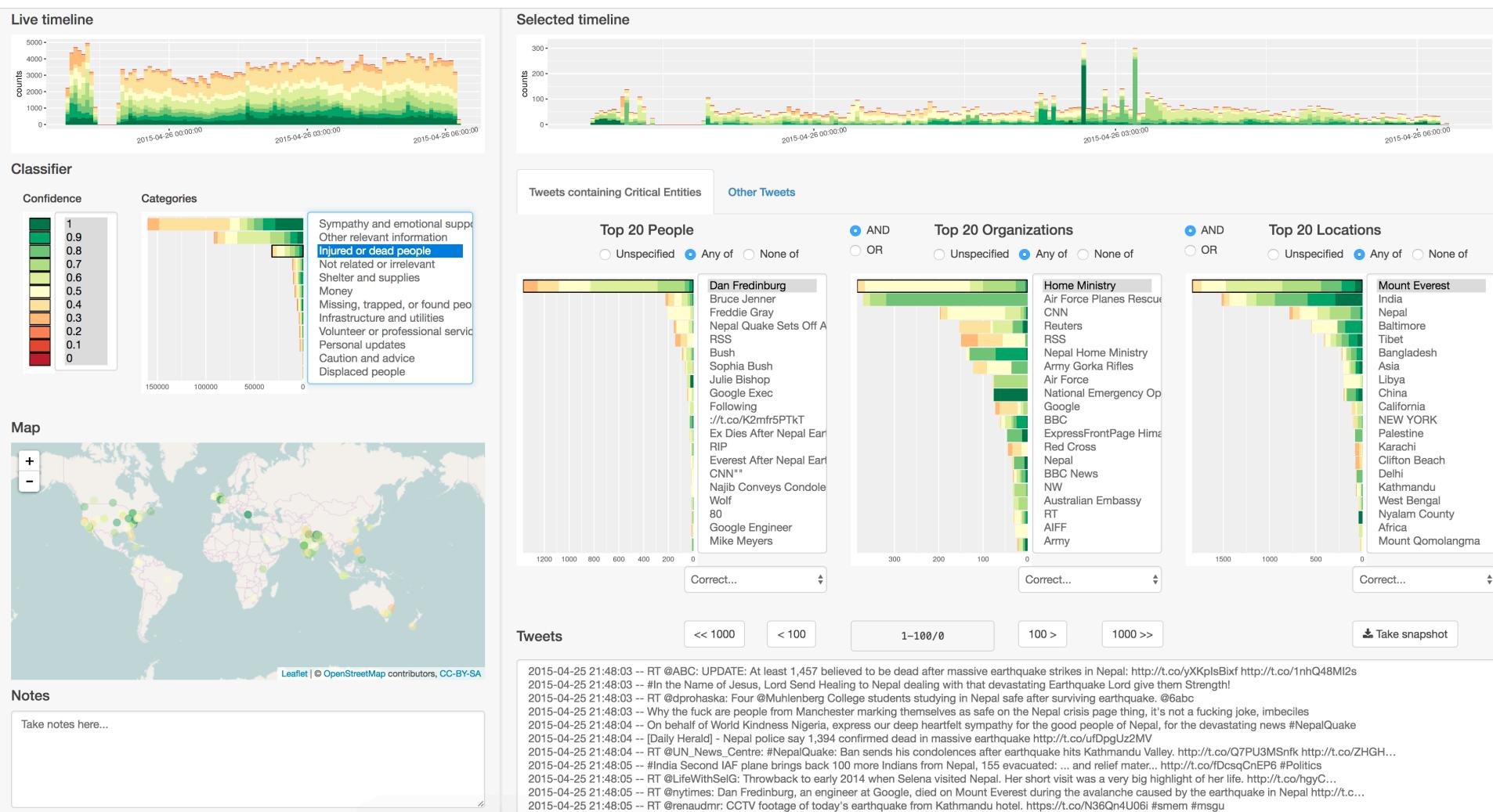


SEVERE DAMAGE (score: 0.73)



SEVERE DAMAGE (score: 0.86)

AIDR Interactive Dashboard (under development)



Media Coverage

nature Forbes



Mashable

WIRED.CO.UK

New
Scientist

THE WALL STREET JOURNAL.
WSJ

VOA
Voice of America

BROOKINGS

GULF TIMES

Qatar Tribune
First with the news and what's behind it
Nation • Business • Sports • Chill Out

The Peninsula
Local focus. Global vision.
QATAR'S DAILY NEWSPAPER

Thank You!

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