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CENTER FOR SPATIAL STUDIES



Photo: Santa Barbara Harbor 25 May 2010, Alan Glennon



Photo: Stearns Wharf 25 May 2010, Alan Glennon

Grassroots Crisis Mapping

Alan Glennon
spatial@ucsb

e-mail: alan@spatial.ucsb.edu
Twitter: [@glenon](https://twitter.com/glenon)

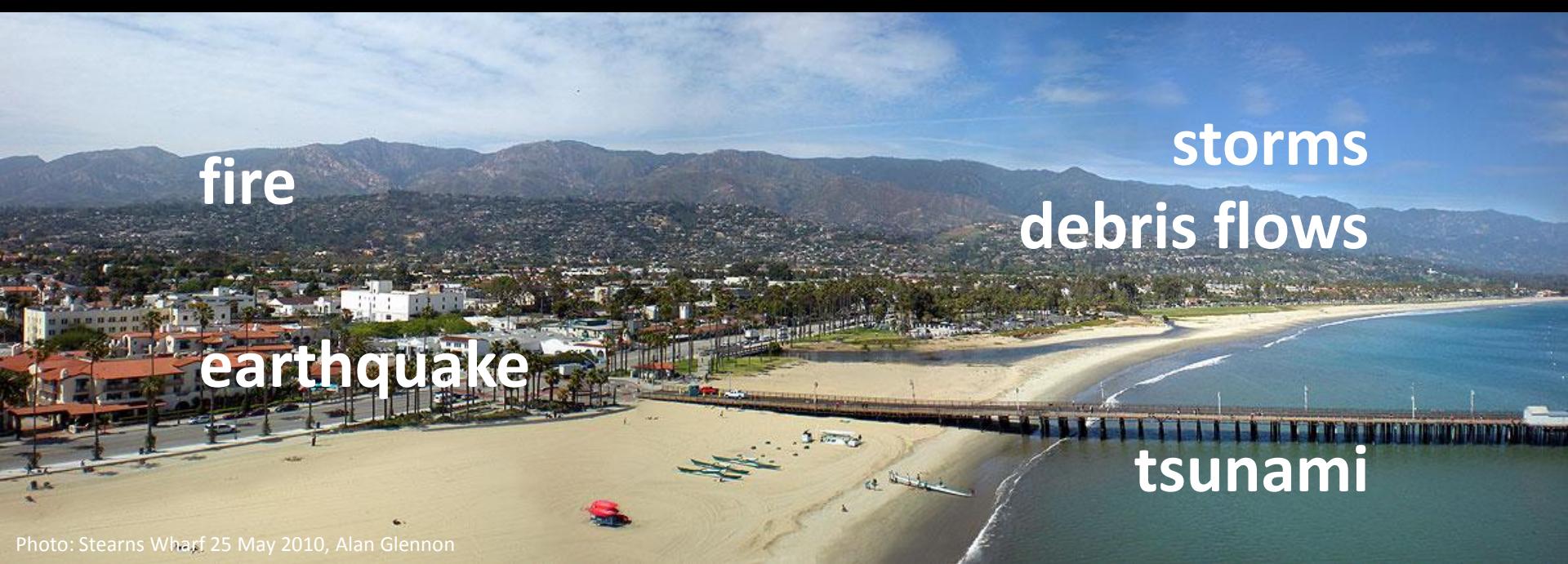


Photo: Stearns Wharf 25 May 2010, Alan Glennon

Grassroots Crisis Mapping

Alan Glennon
spatial@ucsb

e-mail: alan@spatial.ucsb.edu
Twitter: @glennon



Photo: Chile Earthquake 02 March 2010, IFRC

Static infrastructure accidents :
oil spills, nuclear leaks, bridge collapse

Mobile infrastructure accidents:
aviation, shipping, rail accidents

Human action:
terrorism, violence, war



Photo: NASA

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Photo: NASA



Photo: Station Fire Press Conference, Photo: California EMA

Photo: Media Circus by Tony Gambone



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Photo: Jesusita Fire, Torbak Hopper



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Jesusita Fire

May 5-18, 2009

8,733 acres, 80 homes destroyed; 15 homes damaged



Photo: Jesusita Fire, Kevin Alan Baum

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ALLEGRO805

2009-05-05 01:57 PM

emergency alert systems... testing... testing... How long will it take for info to become available about this event. As of two minutes ago: Indy, KEYT, Daily Sound websites... nothing.

POPE

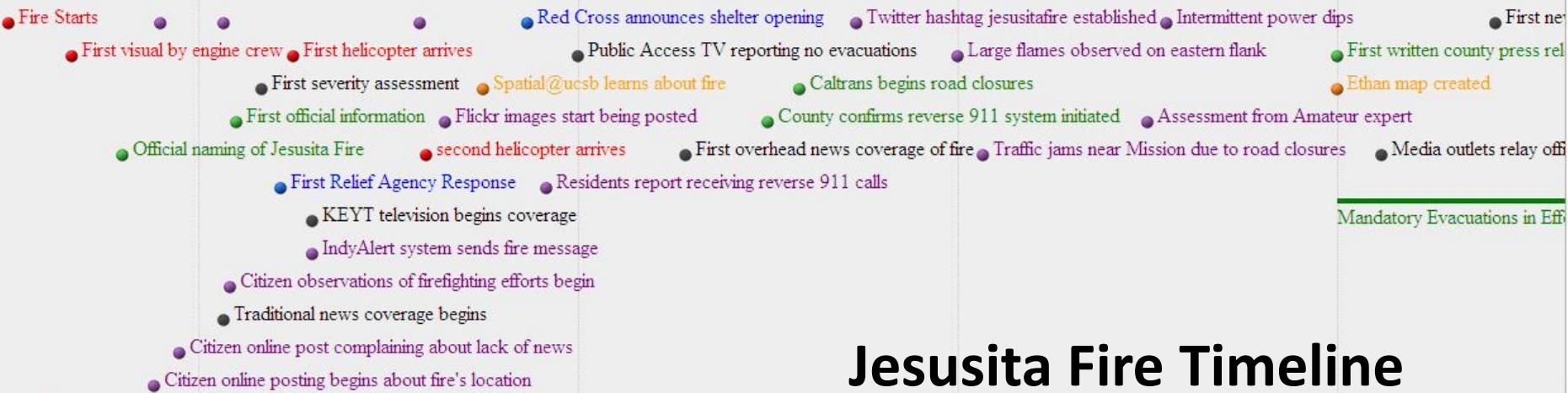
2009-05-05 01:59 PM

It looks like right near Inspiration Point, below Cathedral Peak.

COMMENT 26538

2009-05-05 02:01 PM

I can see it from my office window (I'm downtown on Canon Perdido). It seems further South than Ontare - maybe a building fire? Where's our local news? Funny that the only source of info so far is on KEYT



Jesusita Fire

Jesusita Fire Timeline

<http://arogi.com/fireline>

Incoming Data

Community web: Independent and Edhat bulletin boards
Social Internet: Twitter, Flickr, Facebook
Television and radio (traditional form and online)
Government and official outlets (online and via press)
Satellite imagery (online)
Newspaper stories (online)
Direct observation
Information kiosks
Conversations with first and secondhand eyewitnesses

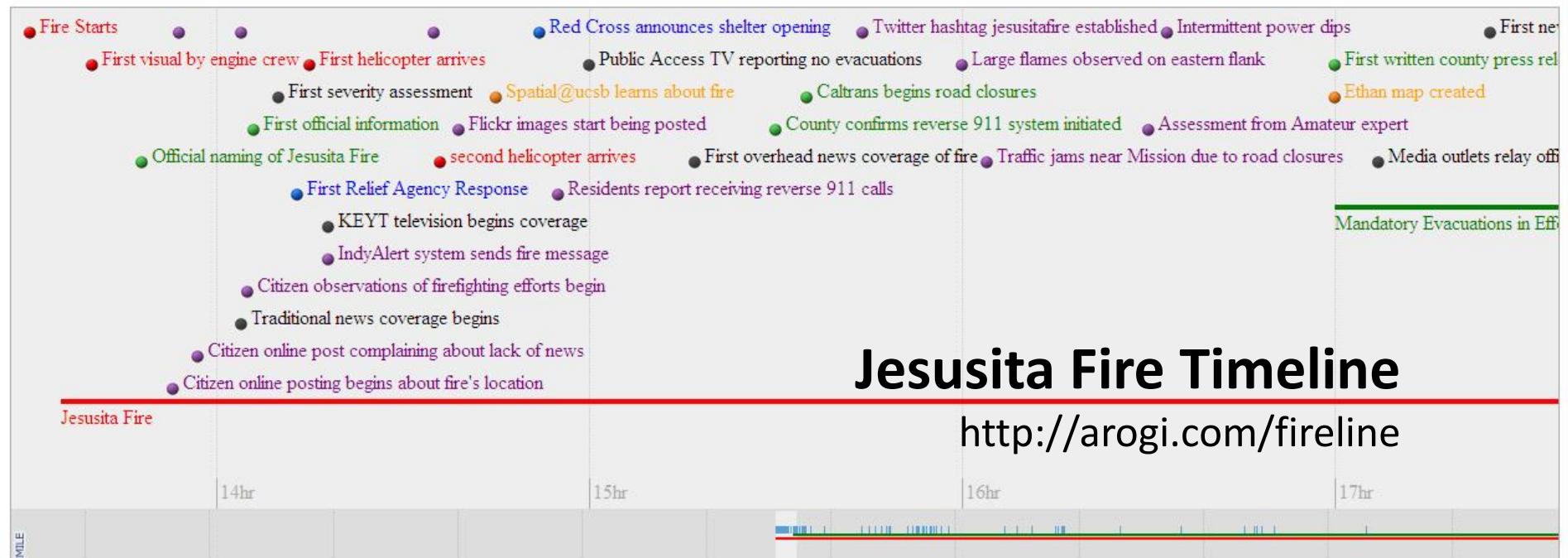




Photo: Mark Grosch, UCSB



Fire Starts
First visual by engine crew
First helicopter arrives
First severity assessment
First official information
Official naming of Jesusita Fire
First Relief Agency Response
Citizen online
Traditional media
Citizen online press
Jesusita Fire

Red Cross announces shelter opening
Public Access TV reporting no evacuations
Spatial@ucsb learns about fire
Flickr images start being posted
second helicopter arrives
Residents report receiving reverse 911 calls

Twitter hashtag jesusitafire established
Large flames observed on eastern flank
Caltrans begins road closures
County confirms reverse 911 system initiated
First overhead news coverage of fire
Traffic jams near Mission due to road closures

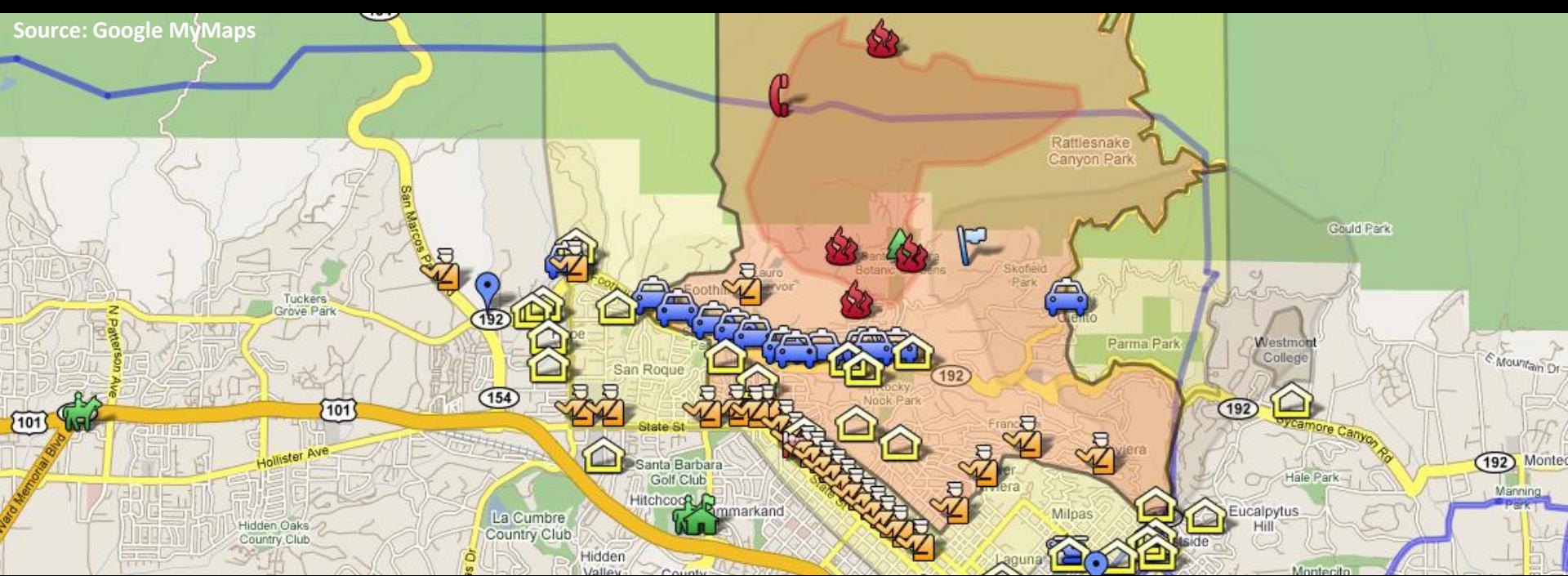
Intermittent power dips
Ethan map created
Assessment from amateur expert
Media outlets relay off

Mandatory Evacuations in Effect

Ethan's Google MyMap

Created by Mark Grosch

with Carlos Baez, Paul Bartsch, Alan Glennon, Indy Hurt,
Matt Niblett, Tim Niblett, Jake Sopher, and many others



Title
Jesusita Fire

Description

Size: Approximately 8,733 acres
Containment: 100% contained on May 18, 2009 at 6PM local time (source: InciWeb)
Ignition Time: 145PM PDT, May 5, 2009 |

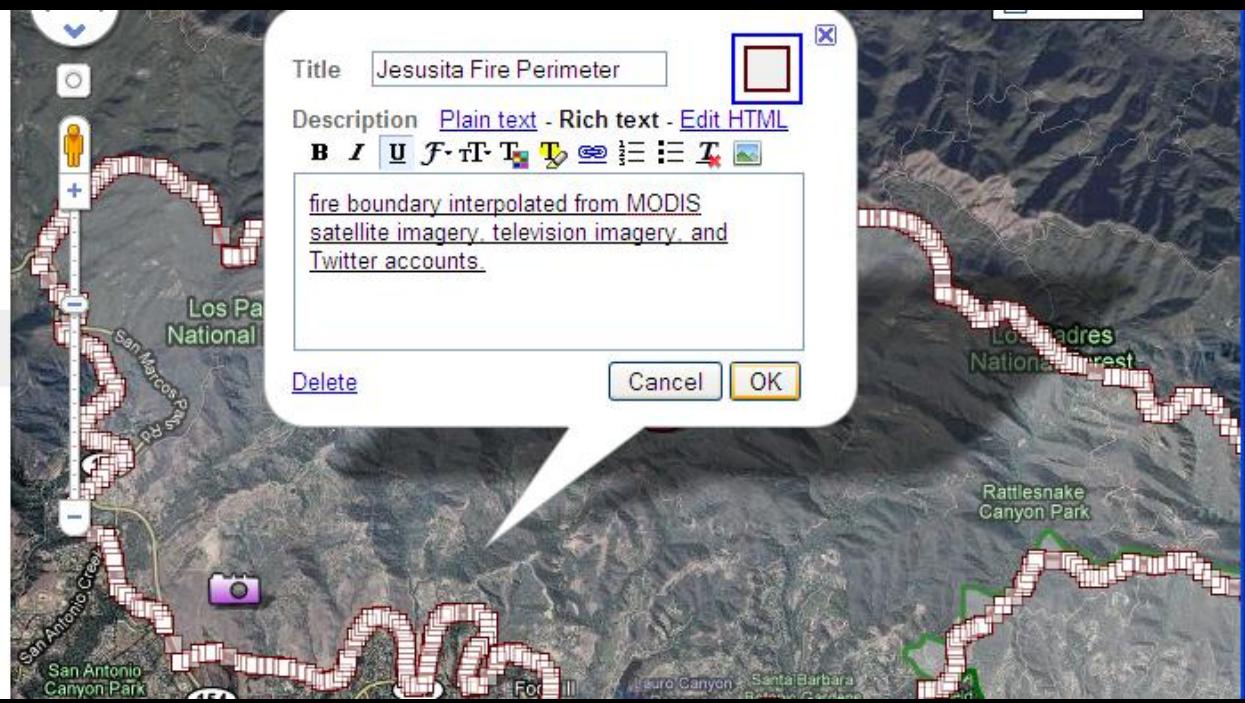
[Jesusita Fire Perimeter](#)
fire boundary interpolated from MODIS satellite imagery.

[Tea Fire Boundary](#)
Tea Fire Size: 1940 Acres (8 square km) Dates:

[Gap Fire Boundary](#)
Gap Fire Size: 9443 Acres (38.6 square km) Dates:

[Southeastern Extent of Zaca Fire](#)
The Zaca fire started on July 4, 2007 and by August 31,

[Approximate Jesusita Fire Ignition Point](#)
This is a preliminary point for the Jesusita Fire's ignition





Jesusita Fire in Santa Barbara - LA Times map (Los Angeles Times); 67525



Map of burned homes in Santa Barbara (Los Angeles Times); 27777



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**VISITORS****MAP**

595,673 Jesusita Fire (Ethan)

188,308 SBC Jesusita Fire Santa Barbara, CA (Robert O'Connor – fire news blog)

89,214 Jesusita Fire Map (Randy - Independent.com)

67,525 Jesusita Fire in Santa Barbara - LA Times map (Los Angeles Times)

27,777 Map of burned homes in Santa Barbara (Los Angeles Times)

26,330 Jesusita Fire Evacuation Areas: Approximation (COSB)

25,454 Santa Barbara 'Jesusita Fire' (ABC7 Eyewitness News)



Why did the Ethan map resonate?

Perhaps,

- maps as a synthesis and contextualization of many information inlets
- Editable by anyone
- Maintained by passionate, somewhat expert core group
- Interactive: map comment section offered community discussion
- Continuity (to contrast news sites that often created a new map for each new story)
- Fast, continuous updates
- Ubiquity and ease of Google Maps UI



What didn't work well with the Ethan map?

Cartography constraints
(clumsy symbology and editing
& no way to easily distinguish
from other MyMaps)

No analytic capability

Few or no user reporting
curatorial tools

False positives from users,
satellite, and sensor data

No automated method for data
updating

Some lessons from Jesusita Fire (5/2009) online activities

Last word wins.

Users are becoming better at rapidly finding and engaging useful online sources;
Ad hoc communities form rapidly.

User misinterpretation and relay of authoritative data happens.

False negatives are far less acceptable (dangerous) than false positives.
Goodchild (2010)

Difficult to identify and distinguish authoritative sources within an online discussions (and increased activity often acts as a proxy for reputation).

Splintering of data outlets is ongoing (hypothesis: such platforms/infrastructure follow a power law or long tail)

Asserted platforms are often abandoned without notice.

Very little guidance exists for appropriate preservation of real-time user-generated data.

Easy to deploy and use, robust, but flexible, infrastructure still needed (beyond discussion, reporting and simple maps).



Photo: Haitian national palace; United Nations Development Programme

2010 Haiti 7.0 M_w Earthquake

January 12, 2010

92,000 – 230,000 deaths

250,000 residences & 30,000 commercial buildings
destroyed or severely damaged



Photo: Haitian national palace; United Nations Development Programme



Photo: Tufts Fletcher School Haiti Crisis Response 2010; Ushahidi

Haiti

The 2010 Earthquake in Haiti

Ushahidi-Haiti @ Tufts
UNIVERSITY

Search Reports Here:

DOWNLOAD REPORTS (3592)

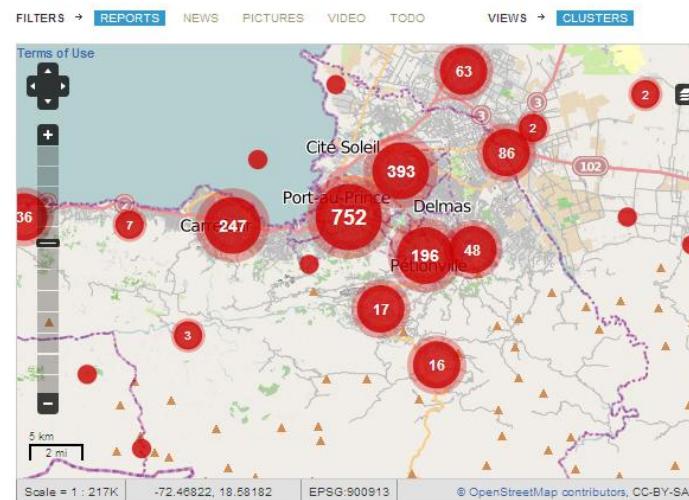
REPORTS RSS

Haitian Diaspora Community:
We need your help! Help Us Help Haiti >

Announcement
Peace Dividend Marketplace can link you with
goods and services in PAP; call 29 41 10 01

+ SUBMIT INCIDENT

HOME REPORTS SUBMIT INCIDENT GET ALERTS CONTACT US HOW TO HELP ABOUT



↑ CATEGORY FILTER

ALL CATEGORIES

- 1. URGENCES | EMERGENCY
- 2. URGENCES LOGISTIQUES | VITAL LINES
- 3. PUBLIC HEALTH
- 4. MENACES | SECURITY THREATS
- 5. INFRASTRUCTURE DAMAGE
- 6. NATURAL HAZARDS
- 7. SECOURS | SERVICES AVAILABLE
- 8. AUTRE | OTHER

↓ TIMELINE OF EVENTS



How to Report

- SMS/Text Local: 4636.
SMS/Text International: +44 762.480.2524.
- Email: haiti@ushahidi.com
- Twitter: #haiti or #haitiquake
- Web Form: Submit Report

↓ OTHER LAYERS



On Twitter

Help Tag Photos

Tag photos from Haiti to help find missing people.

#haiti

Person Finder

Person Finder: Haiti Earthquake
English | Français | Kreyòl | Español



Photo: Ushahidi, Erik Hersman



Photo: Tufts Fletcher School Haiti Crisis Response 2010; Ushahidi



Aerial pictures transparency (enable (+) overlay first)

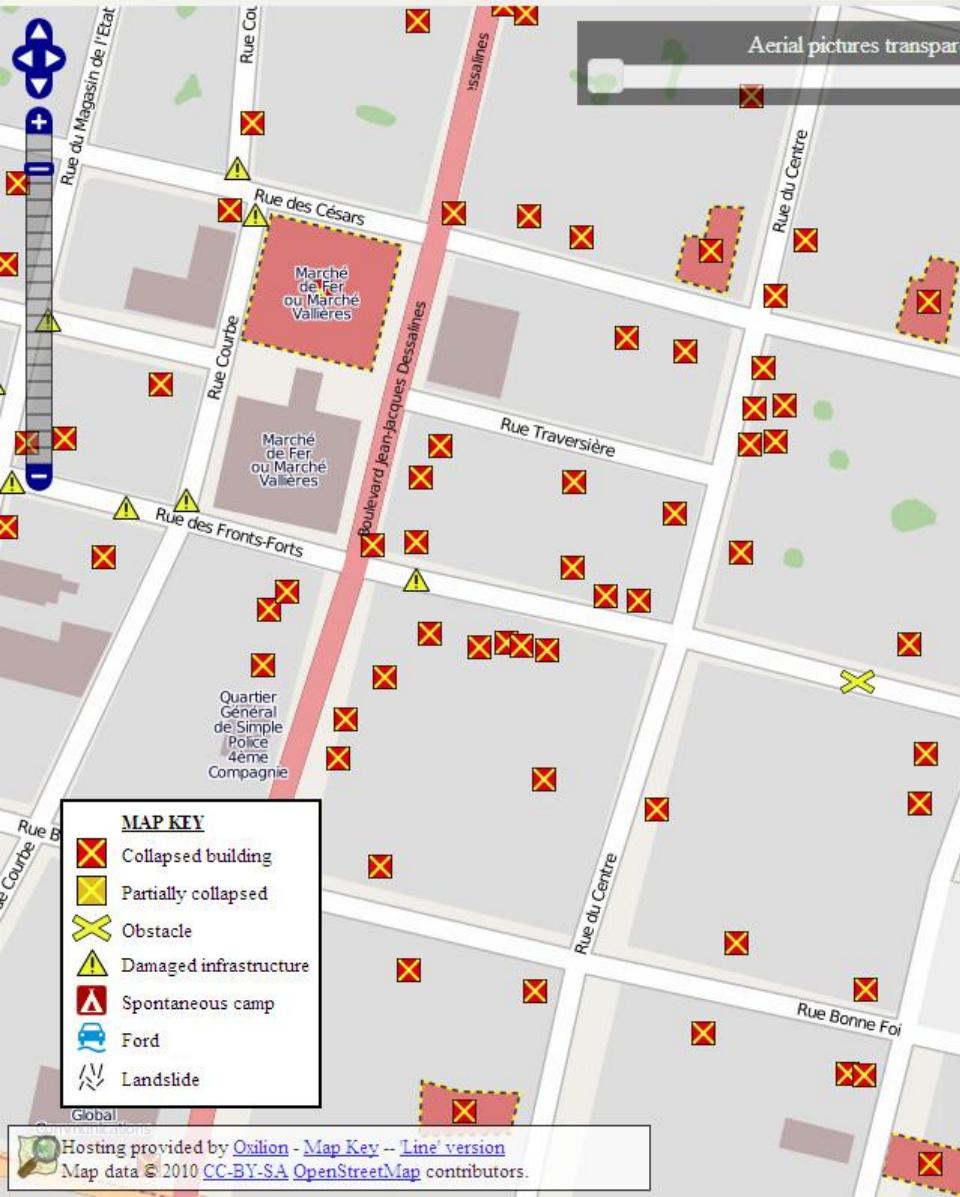
Base Layer

- Haiti Mapnik coverage
- Regular Mapnik coverage
- Tiles@Home

Overlays

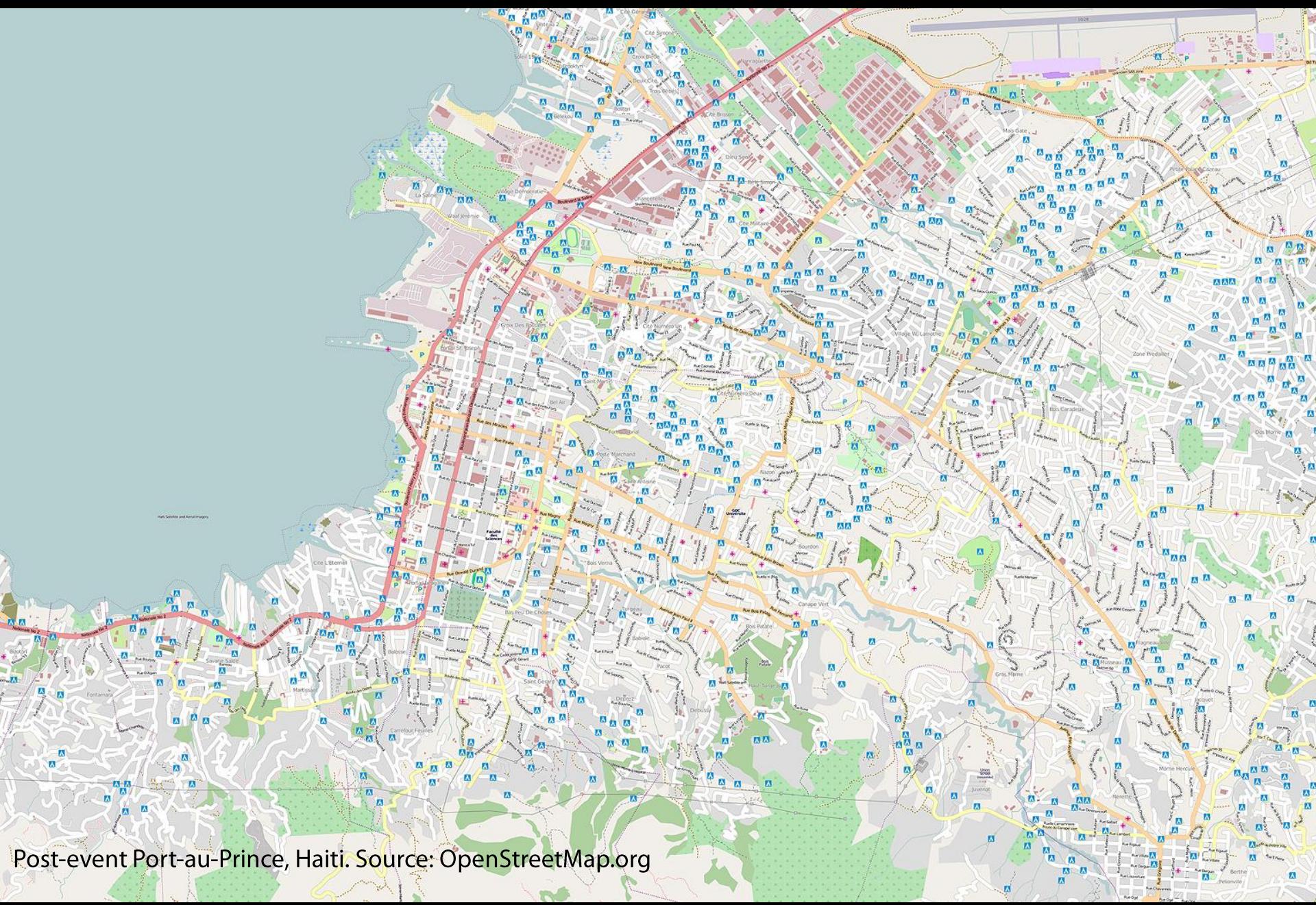
- Hillshading (NASA SRTM3 v2)
- Satellite/Aerial Imagery
- NOAA 2010-01-18
- DigitalGlobe Worldview-2 01-18
- GeoEye IKONOS 2010-01-17
- GeoEye GE1 2010-01-16
- GeoEye IKONOS 2010-01-15
- GeoEye GE1 2010-01-13
- GeoEye mosaic
- DigitalGlobe Crisis Event Service







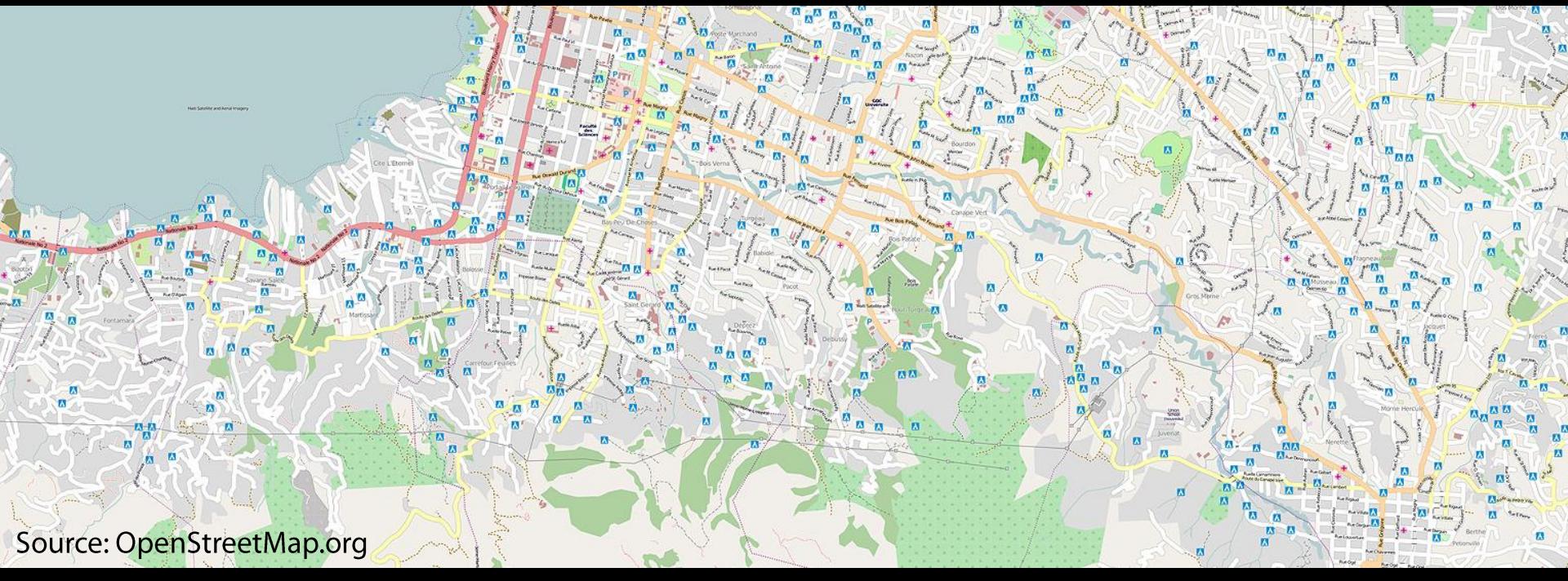
Pre-event Port-au-Prince, Haiti. Source: OpenStreetMap.org



Post-event Port-au-Prince, Haiti. Source: OpenStreetMap.org

Sea change in the legitimacy of crowdsourced geographic data. For instance, all the United Nations agencies acting on the ground in Haiti used OpenStreetMap for their print maps¹.

¹Johnson, Crowley, & Erle; Where 2.0, 2010



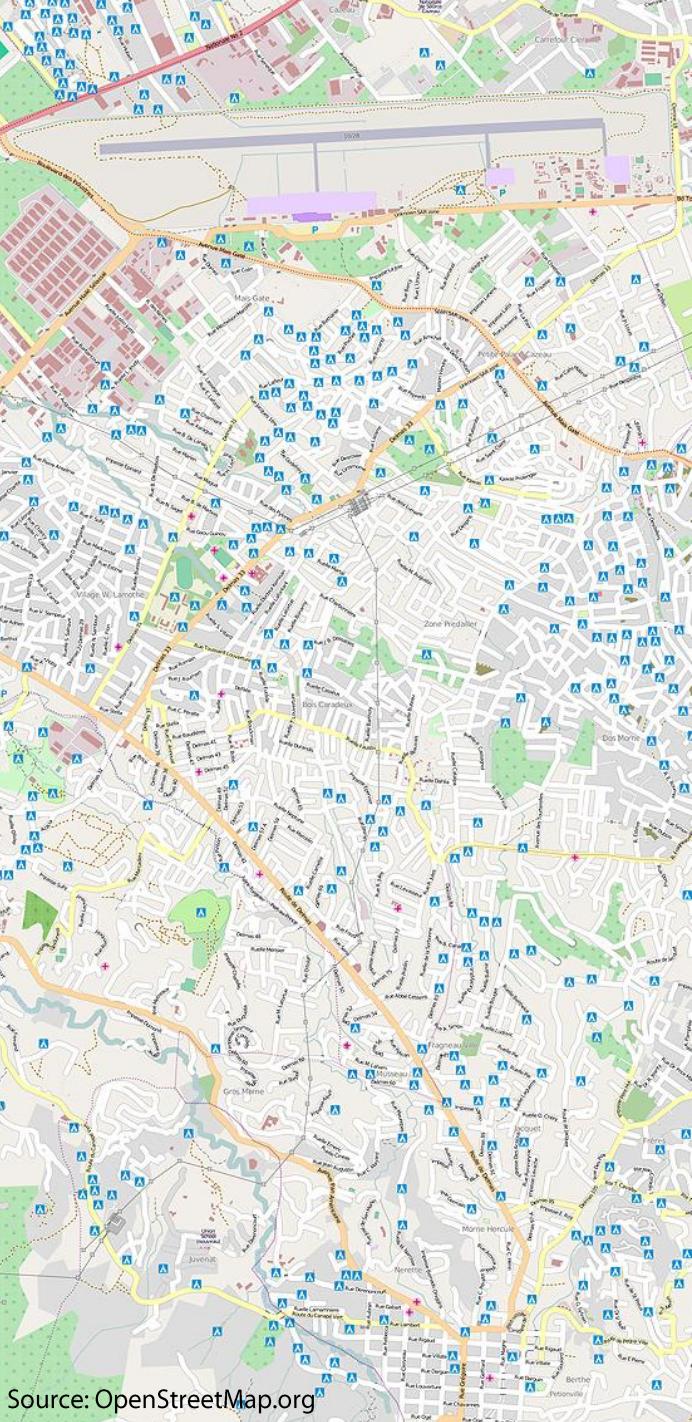
Outcomes

after Johnson, Crowley, & Erle; Where 2.0, 2010

- Complementary technologies (affected population reports and open maps) integrated.
- Fast cycle, open maps and data saved lives.
- Partnerships and community formed, but with the realization that these have carrying capacities.

Needed

- Ethical Code of Conduct



Source: OpenStreetMap.org

Engaging the lessons...

Prepare for real-time community discussion.

Form and cultivate stakeholder and cross-institutional partnerships.

Know the available tools.

Have the expertise and resources to deploy.

Crisis Commons
Second Tuesdays, 6pm-9pm
UCSB Phelps Hall, Room 3512



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