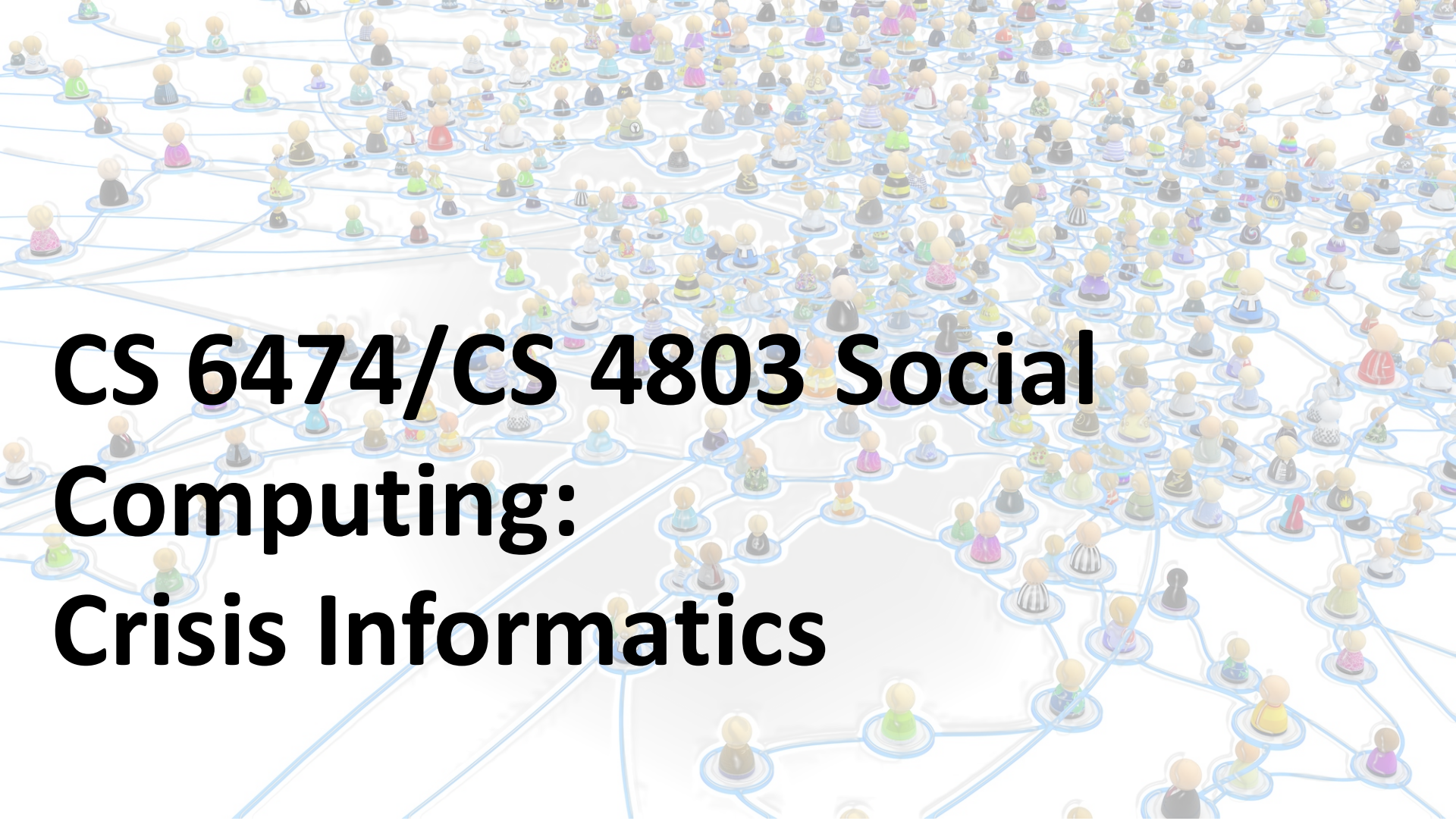


CS 6474/CS 4803 Social Computing: Crisis Informatics

Munmun De Choudhury

munmund@gatech.edu

Week 12 | November 8, 2017

Discussion of Assignment III

Crisis Informatics

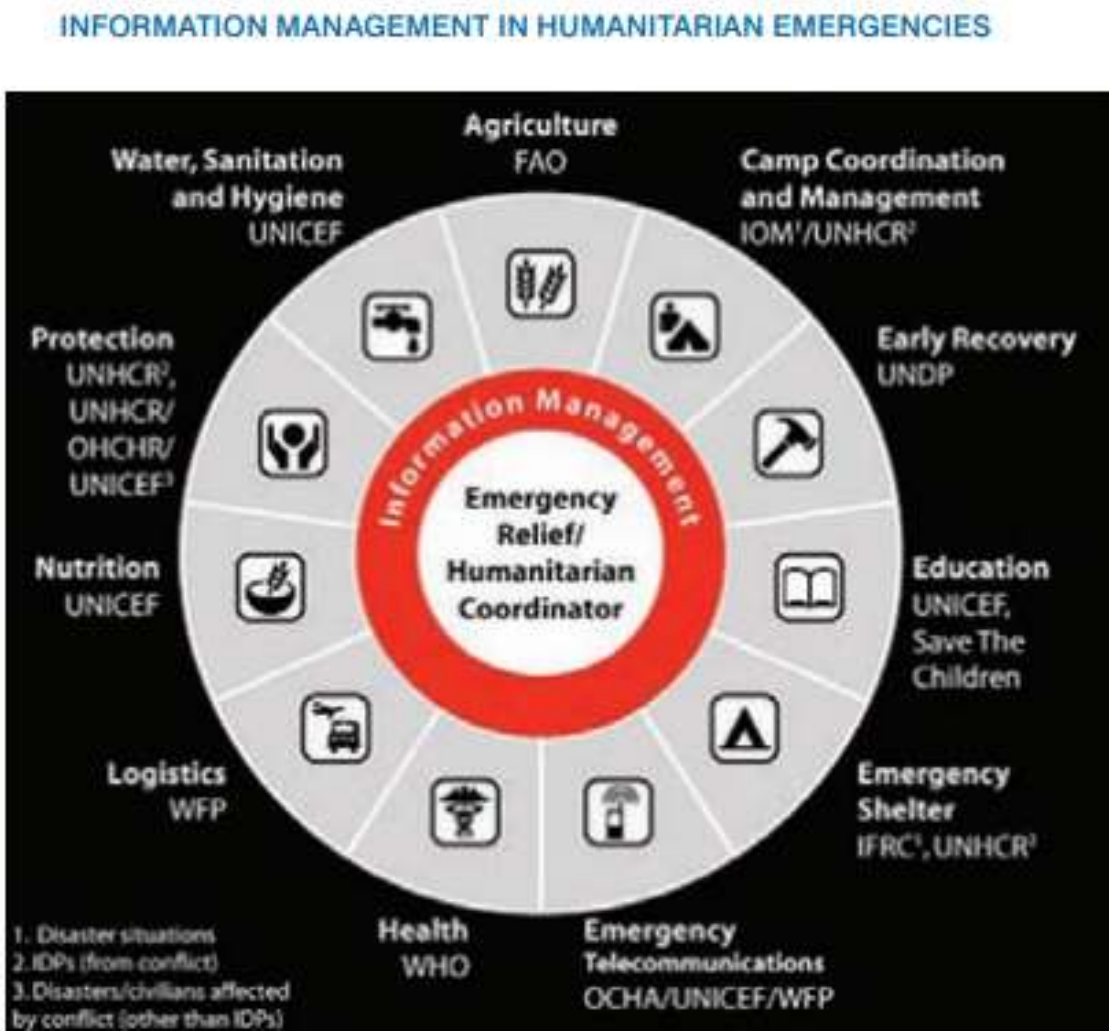
- Definition: An integrated approach to the technical, social, and informational aspects of crises.

  —*Coined by Hagar (2006, 2010), Palen (2007, 2011)*

- Scope: Full life-cycle of a crisis

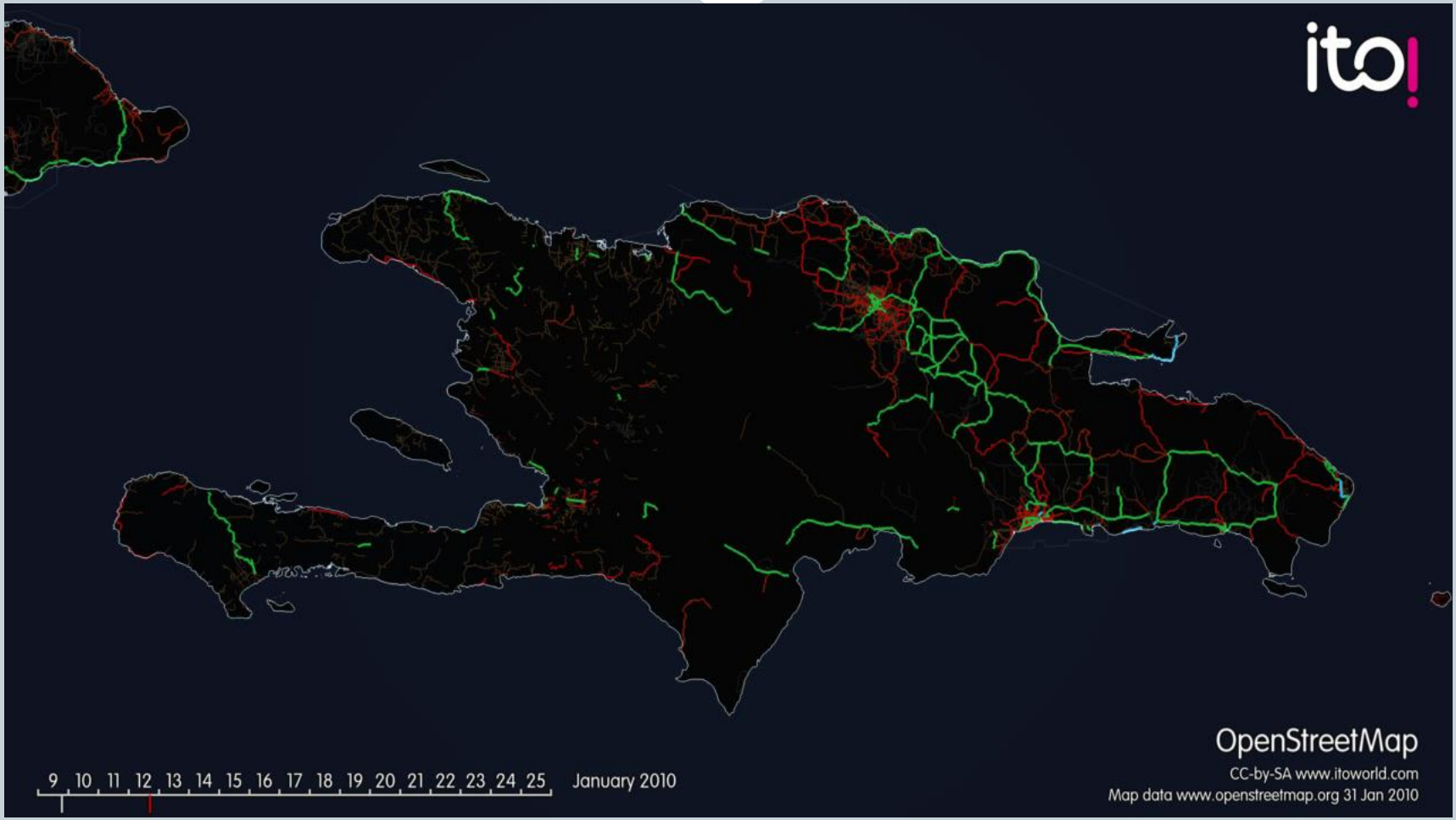
- Focus: Needs and contributions of the public

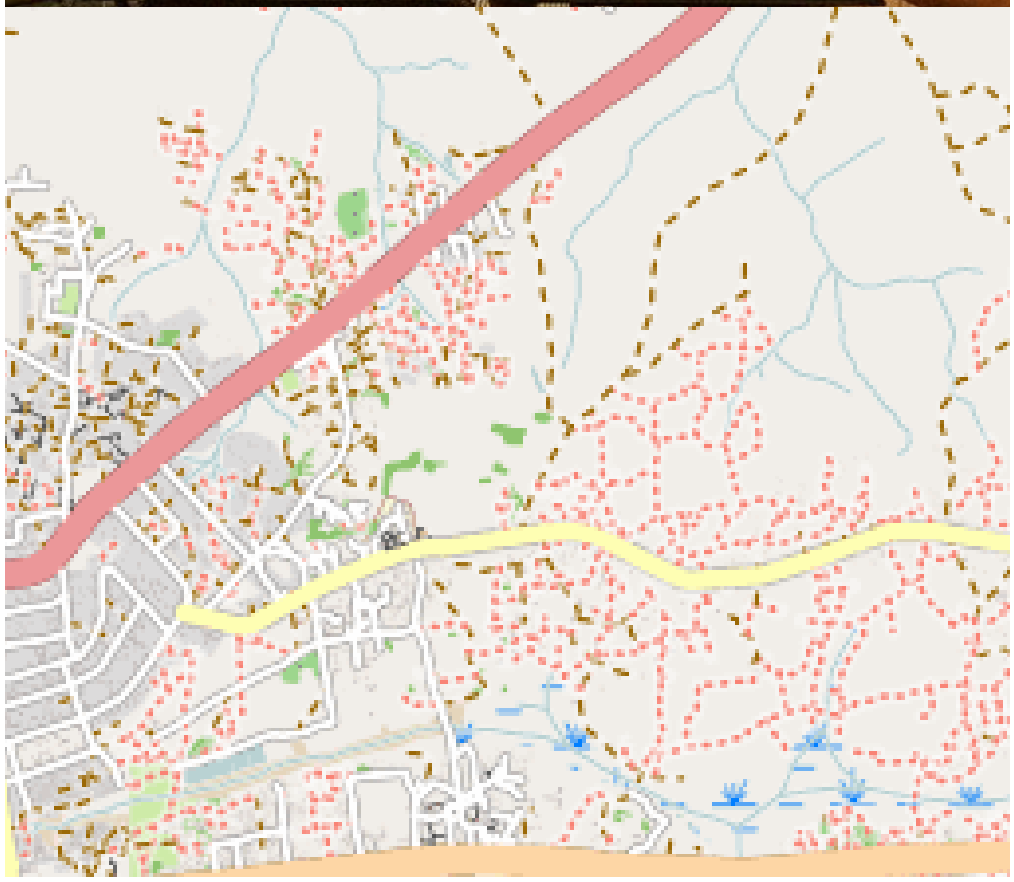
Conventional, Centralized Info Management



Source: Harvard Humanitarian Initiative. Disaster Relief 2.0

Open Street Map – Haiti 2010





Gulu, Uganda:

U.S. State Department HIU worked with Humanitarian Open Street Map Team (H.O.T.) to deliver high-resolution commercial satellite imagery to “the crowd” for a Red Cross disaster reduction project.

Tracking Population Movement

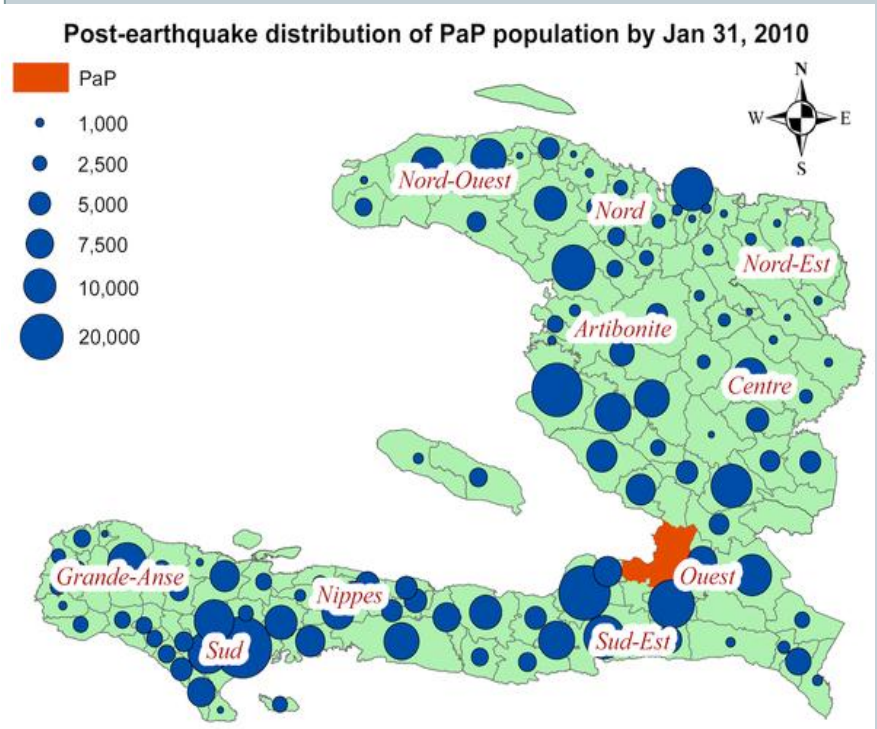


Figure 2. Est. distribution of persons who moved out of Port-au-Prince after the earthquake.

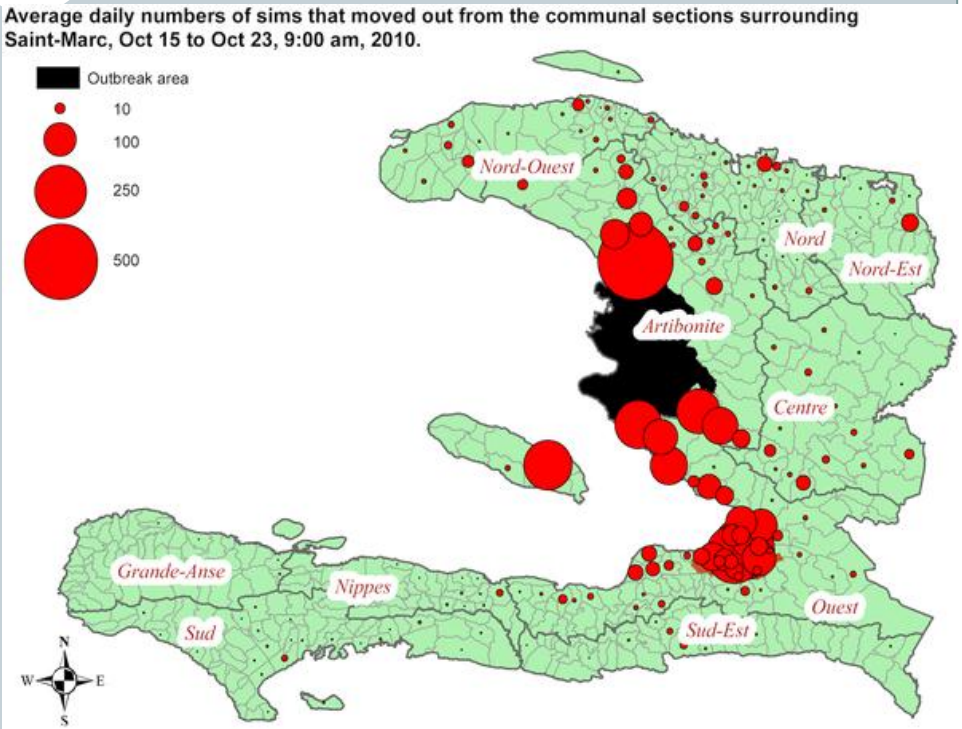
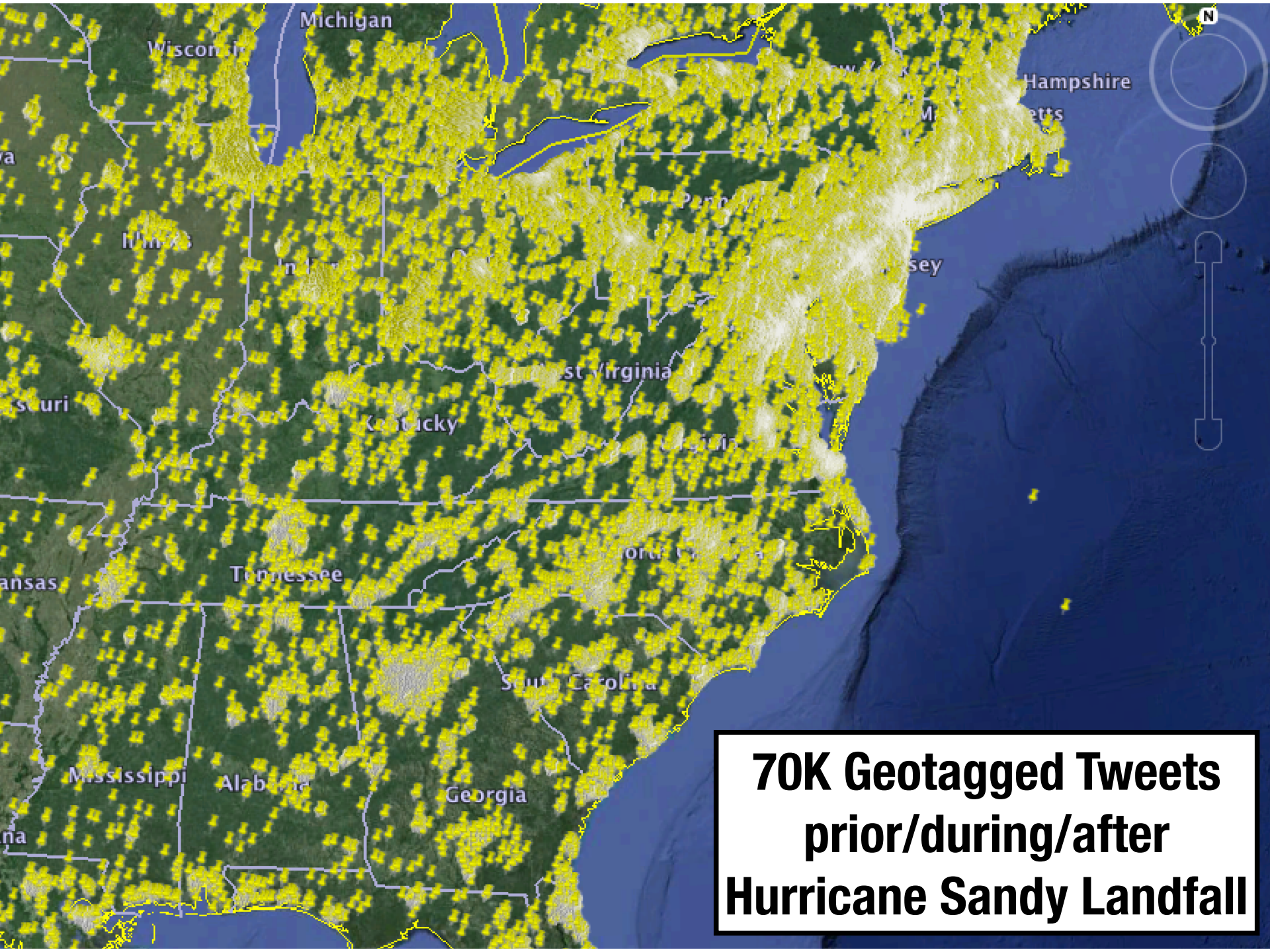


Figure 5. Average daily numbers of SIMs moving out of the cholera outbreak area.


Michigan
Wisconsin
Hampshire
Tennessee
Georgia
Mississippi
70K Geotagged Tweets
prior/during/after
Hurricane Sandy Landfall

URGENT Christopher Frecynet is still alive under his house. 64 Rue Nord Alexis.(RUELLE NAZON, AVENUE POUPELARD

Mirna Nazaire lives in P-A-P at Bizoton 6#12. Entire neighborhood without food. People are dying.

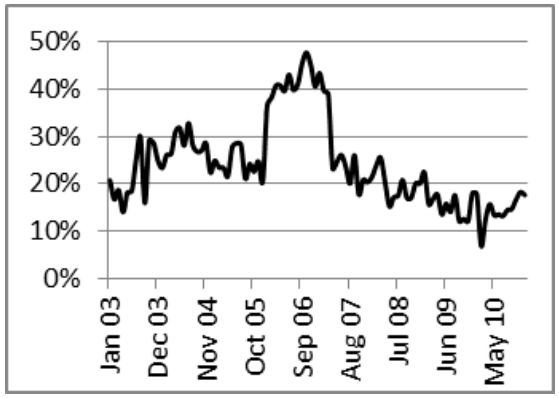
French hospital is now open and ready to receive the wounded at the french lycee in rue marcadieux bourdon

- Questions of interest:
  - Which hospitals are open?
  - Who is in trouble? Does anyone have any tents?
  - Where are the open roads?
  - Any information on Person ABC?
  - What help is needed?
- Who needs this info?
  - Aid Agencies
  - Non-Governmental Organizations
  - Red Cross, UN, etc.
  - Military & other relief suppliers
  - Individuals in Haiti
  - Donors - matching needs to offers etc.

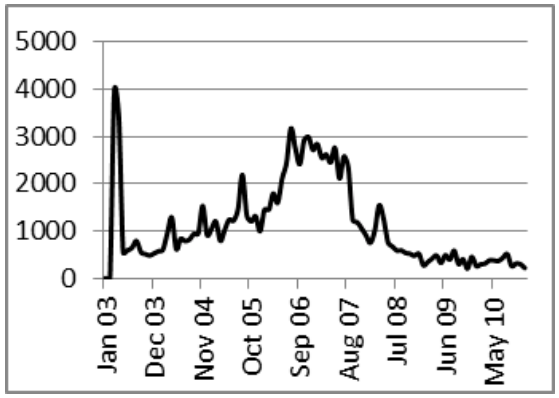
Blogs as a Collective War Diary

Summary

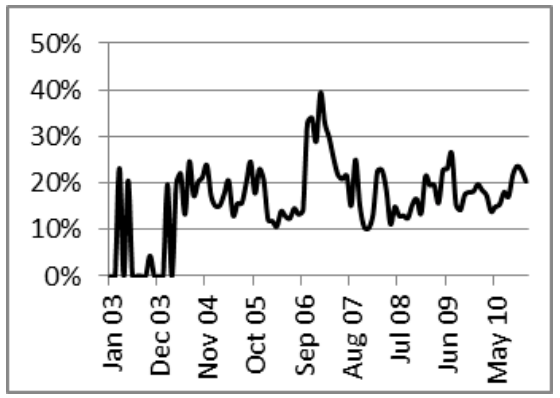
- Main goal: what can the blogosphere reveal about how a society responds to war over time?
- Data: Iraqi blog data spanning eight years during the Iraqi wars
- Findings:
  - Blog topics mimicked the manifestation of war and violence in the offline word
  - Pronoun use indicates the emergence of a collective identity
  - Discussion of daily life topics decreased during wartime; when violence waned, people got back to discussing daily life topics
- Strengths:
  - Mixed methods approach
  - Temporally long dataset
  - Analysis of both Arabic and English posts (English three times more frequent)



a. Timeline of war topics in English

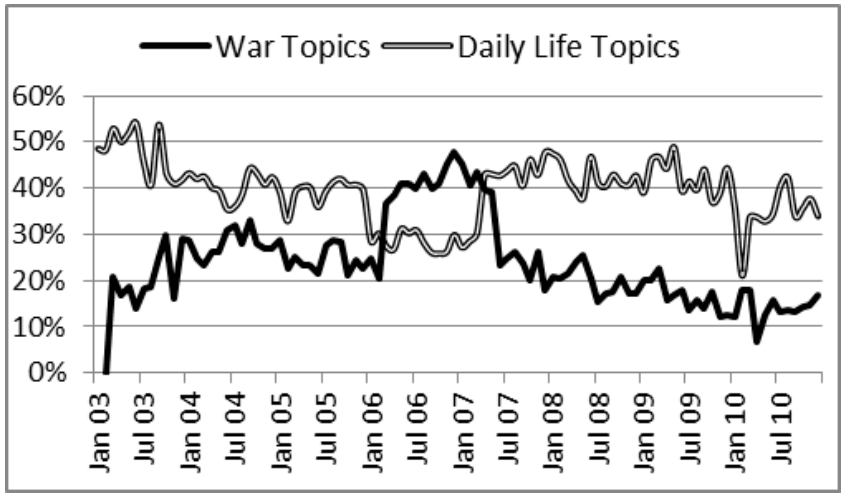


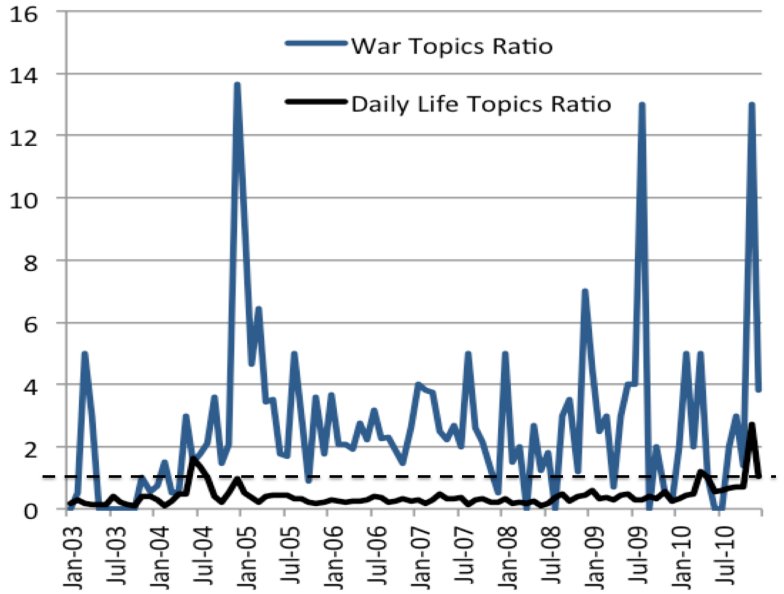
b. Body count



c. Timeline of war topics in Arabic

Arabic posts were more impersonal and showed a lag with external events





Mark et al (and most crisis informatics work) do not distinguish between blog authors posting first hand experiences of war (directly affected) and those who are affected peripherally.

What kind of differences would you expect for the two groups?

Voluntweeters: Self-Organizing by Digital Volunteers in Times of Crisis

Summary

- The paper presents a study of "digital volunteers" in the aftermath of the January 12, 2010 Haiti earthquake
- The paper explores the motivations, resources, activities and products of digital volunteers.
- Using social theory about self-organizing, the research offers insight about features of coordination within a setting of massive interaction.
- Some observations:
  - Appropriate ad-hoc communication infrastructures
  - Role identity, emotional impact and consequences

"Why I did it? has no other explanation other than I had to. One part of the world was in pain and I could not sit back watch others do something when I had a little chance to send some drinking water to people if I could."

"I think that's when I went on Twitter and started tweeting. Then I discovered a whole bunch of people tweeting for Haiti and started doing it myself and building up connections as much as I could in order to try to save some lives if possible. … As you'll see some of us tweeted 16 hours a day or more… I just hoped what I was doing was helping. I'll never know if my tweets actually helped but that's ok as well."

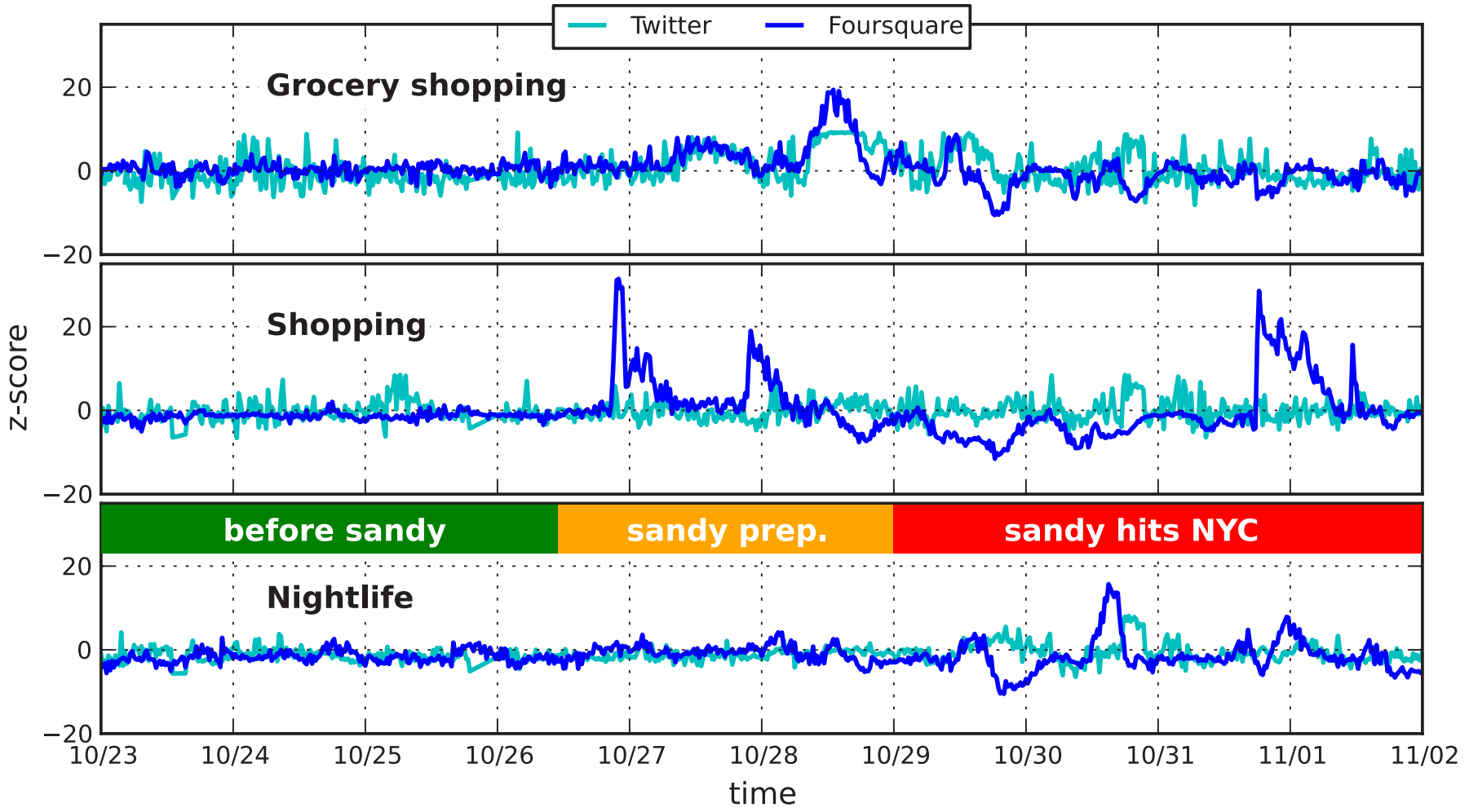
Extracting Diurnal Patterns of Real World Activity from Social Media

Nir Grinberg
Rutgers University
nirg@cs.rutgers.edu

Mor Naaman
Rutgers University
mor@rutgers.edu

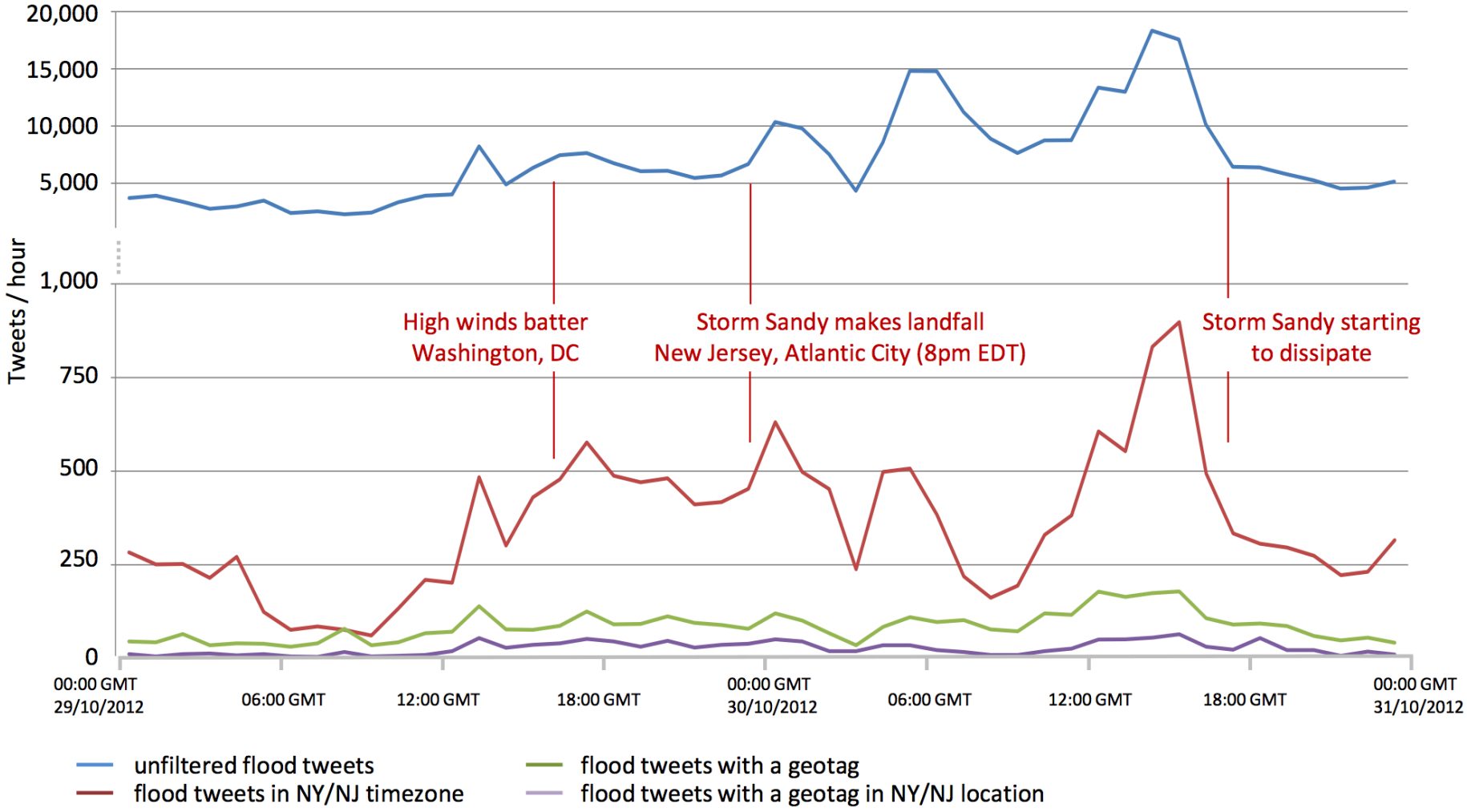
Blake Shaw
Foursquare, Inc.
blake@foursquare.com

Gilad Lotan
SocialFlow, Inc.
gilad@socialflow.com



Real-time Crisis Mapping of Natural Disasters using Social Media

Stuart E. Middleton, Lee Middleton and Stefano Modafferi, *University of Southampton IT Innovation Centre*



Class Exercise I

Both papers show that social media were widely adopted during crisis events, and could be used to study a community's trajectory of rehabilitation and recovery.

Who are possible stakeholders who can act on this information?

What kind of design provisions (e.g., real-time monitoring technologies) could help stakeholders in this process?

How will you measure if such designs have had impact?

Harnessing the Crowdsourcing Power of Social Media for Disaster Relief

Huiji Gao and Geoffrey Barbier, *Arizona State University*
Rebecca Goolsby, *US Office of Naval Research*

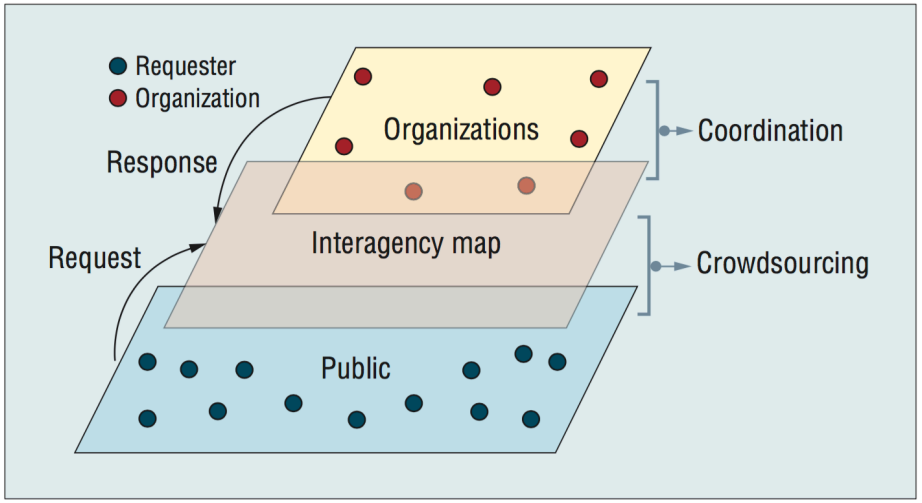


Figure 1. Interagency map. The map works as an intermediary between the public and relief organizations. Requests are collected via social media crowdsourcing. Organizations can then take actions, share information, and coordinate with each other using the information on the map.

Figure 2. Food requests after the Haiti earthquake. The Ushahisi-Haiti crisis map helps organizations intuitively ascertain where supplies are most needed.

Class Exercise II

1) Crisis incidents are time critical. What methods can be developed for validation and verification of crisis related social media data?

2) Under what circumstances might social media crisis data fill gaps or be more useful than traditional sources? What issues might arise while fusing these datasets?

Class Exercise III

1) What are potential models for successful participatory engagement on social media around crises?

2) What would be effective techniques for engaging and motivating volunteers?

Research Challenges

- Technology mediated-behavior
- Data integration and system interoperability
- Information extraction and natural language processing
- Information security and reputation systems
- Legal and policy issues
- Ethics and codes of conduct

Priority Research Challenges

- Determine **where governments can effectively leverage** social networking and crowdsourced data to augment existing info or intelligence for improved decision-making. Conversely, determine where it is not appropriate.

- Determine which **policies** need to be adapted or established. Develop ways for agencies to look ahead in their policymaking 5-10 years with rapid technological change – "Strategic Foresight."