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# **@Hurricanes storm through #socialmedia:**

**A case study addressing the  
concerns of uncertainty with  
emerging technology in a crisis  
situation**

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2<sup>nd</sup> International Crisis and Risk Communications  
Conference

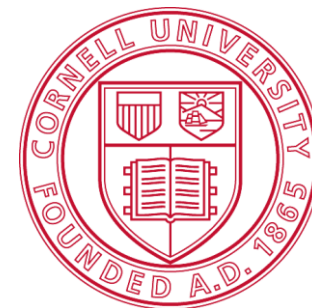
University of Central Florida

Orlando, FL

March 5 – 7, 2012

# Researchers for Project

- **Karen Freberg, Ph.D.** – University of Louisville
- **Major Kristin C. Graham** – United States Military Academy at West Point
- **Kathleen G. Vidoloff, Ph.D.** – Oregon Health Authority
- **Gina Eosco** – Cornell University & American Meteorological Society (AMS)



# OVERVIEW

- Advances in social media have opened a world of opportunities for risk and crisis communication professionals
  - Sharing information across public and private sectors, work remotely during emergency activations, and disseminate necessary emergency information about a crisis with various stakeholder groups.
- Emerging technology communication platforms are transforming how risk and crisis communicators reach their audiences and partner agencies in emergencies and disasters.
  - EX. Practitioners can develop and disseminate timely and consistent crisis messages across multiple social media platforms.



# Social media within crisis communications



***“If communities depend on information for their survival in times of crisis, then communication technologies are their lifelines,”***

*(“New technologies in emergencies and conflicts report,” 2010, p. 4).*

- These emerging technologies have allowed people to feel they have more control over the crisis as well as more connection to the community (Shklovski, Burke, Kiesler, & Kraut, 2010).
- The speed of information sharing across these platforms coupled with the organic creation of viral key terms and hashtags create new challenges for risk and crisis communicators handling uncertainty and credibility issues in the virtual world.

# Purpose of Research

- Focuses on the social media analysis and modeling of Hurricane Irene, which impacted most of the East Coast of the United States in August 2011.
- Determine what constitutes to have a “good” crisis message during a disaster or crisis situation, such as a natural disaster.

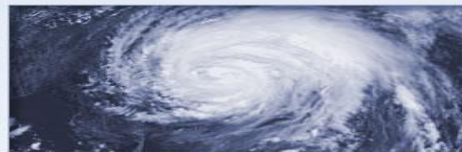


# Background: Hurricane Irene



*"I cannot stress this highly enough: If you are in the projected path of this hurricane, take precautions now. The federal government has spent the better part of last week working ... to see to it that we're prepared. All indications point to this being a historic hurricane."*

- President Barack Obama, August 26, 2011



## HURRICANE IRENE

2011

CATEGORY 1

**LANDFALL:** North Carolina's Outer Banks (August 27, 2011), and then at Little Egg Inlet in New Jersey (August 28, 2011)

**STORM SURGE:** 1.2 to 2.7 metres (predicted)

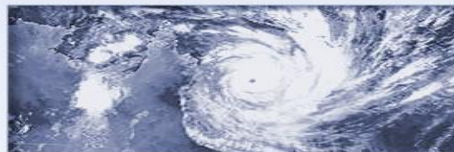
**RAINFALL:** 381mm (predicted)

**DAMAGE:** Widespread flooding, power outages and trees uprooted; localised damage to buildings

**DEATH TOLL:** 18

**WIND:** 140 kph

**SIZE:** 965km wide (maximum)



## CYCLONE YASI

2011

CATEGORY 5

**LANDFALL:** Near Mission Beach, south of Innisfail early morning February 03, 2011

**STORM SURGE:** Cardwell 5 metres

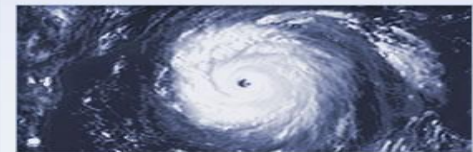
**RAINFALL:** South Mission Beach 471mm; Hawkins Creek 464mm; Zattas 407mm

**DAMAGE:** Devastated buildings in Mission Beach, Tully and Cardwell

**DEATH TOLL:** 1

**WIND:** 290 kph

**SIZE:** 600km wide



## HURRICANE KATRINA

2005

CATEGORY 5

**LANDFALL:** Louisiana, Mississippi, Florida, August 2005

**STORM SURGE:** Florida 8.2m; Louisiana - highest recorded at St Tammany Parish 4.9m; Mississippi 8.2m

**RAINFALL:** Louisiana 380mm; Florida 350mm; Mississippi 250mm

**DAMAGE:** Approx \$US91 billion repair bill; rebuilding process is ongoing

**DEATH TOLL:** 1,836

**WIND:** 280 kph

**SIZE:** 640km wide





## US NEWS

## HURRICANE IRENE

## The Latest

U.S. braces for 'huge' Hurricane Irene

## What's Here



## The Buzz

- TomGales1** RT @TLW3: Commissioner Forman Provides Updates on PWM OEM: "Hurricane Irene wasn't even a hurricane." 1 day ago via twitterfeed t1 @
- Sparklydelite** Stratton House is recovered from Hurricane Irene at last! Good to be back Vermont. The 1 day ago via Twitter for iPhone t1 @
- PersonalShoper7** BREAKING NEWS: Hurricane Irene To Slam Eastern Seaboard!!! <http://t.co/N3u57IXO> 1 day ago via Ping.fm t1 @
- FluffySays** Should legislators use disasters such as hurricane irene to push for government spending cuts? 1 day ago via SocialOomph t1 @
- conchid** Commissioner Forman Provides Updates on PWM OEM: "Hurricane Irene wasn't even a hurricane." 1 day ago via Visibli t1 @
- Tweet4Relief** Commissioner Forman Provides Updates on PWM OEM: "Hurricane Irene wasn't even a hurricane." 1 day ago via twitterfeed t1 @
- TLW3** Commissioner Forman Provides Updates on PWM OEM: "Hurricane Irene wasn't even a hurricane." sa... 1 day ago via twitterfeed t1 @
- picture\_philly** A dog surveys the Schuylkill River after Hurricane Irene: <http://t.co/M48lBhj> #FriFotos 1 day ago via HootSuite t1 @

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## Eye on Social Media



## Where It's At

This social heat map shows where the buzz is coming from.

Use your cursor to navigate:



Expand



## Featured Users

- HurricaneAlerts** Do you share links with friends, family, colleagues on Twitter? If yes, then help us help you >> Dec 12th via CoTweet t1 @
- HurricaneAlerts** Do you share links with friends, family, colleagues? If yes, we'd like your input >>

## Read All About It

- digg** 800response donates to Vermont Disaster Relief Fund to support volunteer effort... [Twitter](#) [Facebook](#) [LinkedIn](#)
- digg** 7 year old boy SURFING hurricane Irene [Twitter](#) [Facebook](#) [LinkedIn](#)

## Trending Topics

No data

# Method



- A total of 2,157 updates were collected from August 22 to September 1, 2011 from the social media monitoring site Social Mention during the time Hurricane Irene hit the East Coast of the United States.
  - Data was collected and downloaded into CSV files for analysis.
- Scale items were incorporated into model based on previous crisis communication and social media literature
- Through analysis of these data and the integration of qualitative and quantitative value modeling techniques, the researchers will determine a set of best practices and propose a simple baseline model for what comprises a “good” crisis message, using the collected Hurricane Irene data as a proof-of-concept model.

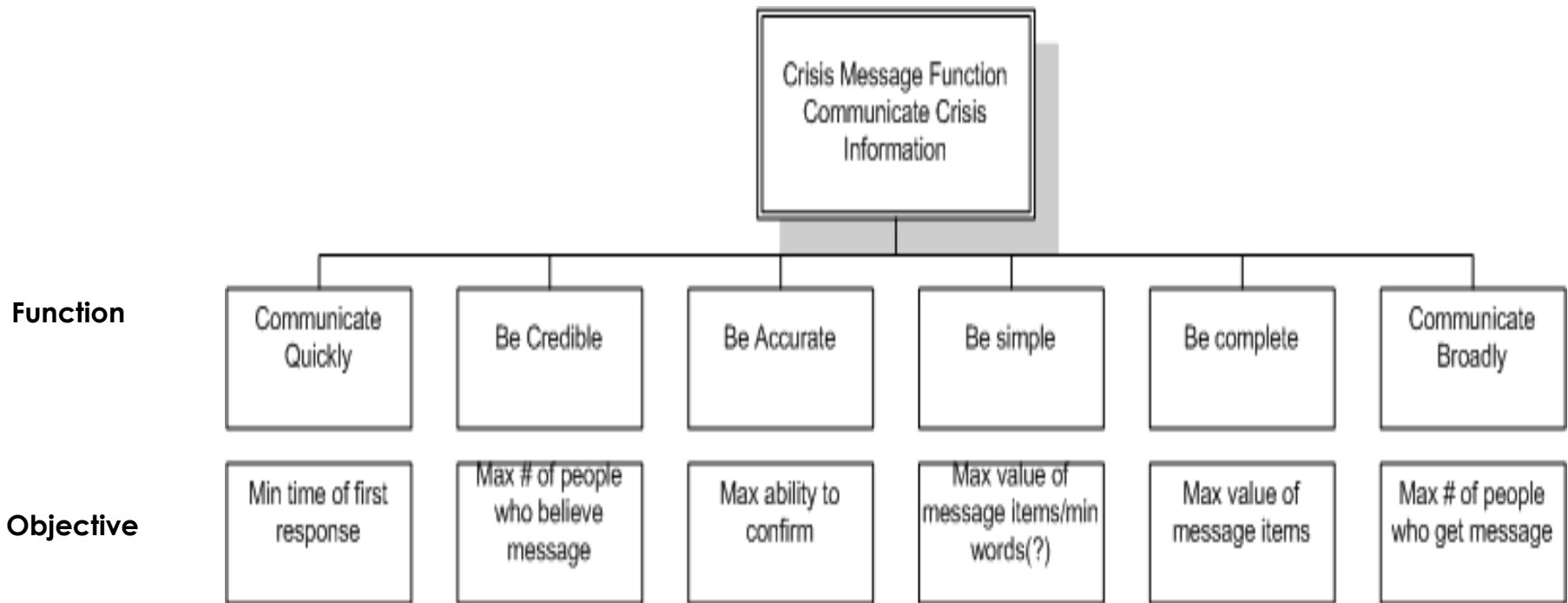


# Results

- Analysis of these updates reveals the range of uncertainty in emergency response actions by first responders.
- Govt agencies involved in the response were inconsistent in the implementation of effective and consistent hashtags in Twitter.
- Unique challenges arose regarding the processes used by practitioners to monitor emerging risks and other emergency issues related to Hurricane Irene within social media.



# Qualitative value model for Crisis Message



# Modeling



- **Steps for constructing a qualitative value model:**
  - Identify overall function – what is the purpose of the system (i.e. the purpose of a “good” crisis message)
  - What are the supporting functions?
  - What is the objective of the supporting functions (i.e. what should they do)?
  - How can we measure how well the supportive functions are doing?
    - Are there existing values for these functions (accredited scales, existing measures) or must these be created? Are they objective or subjective measurements?

# Modeling

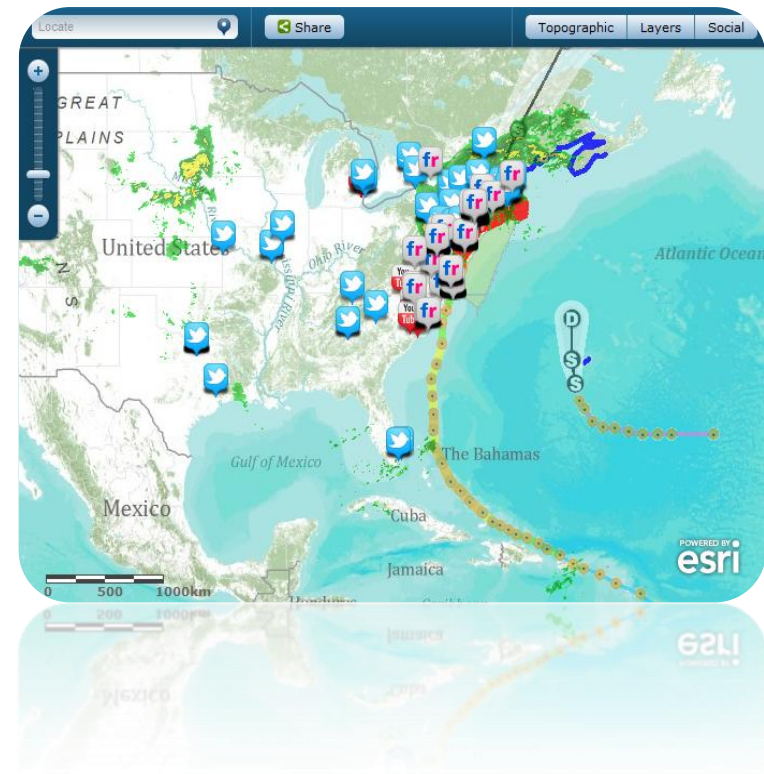


## ■ Next steps:

- We are currently using objective and subjective scales to measure the performance of our messages against our model
- This model will be adjusted by weighting the most important factors and checking against Hurricane Irene conversation data
- This model will be blind tested against data from Hurricanes Katia and Lee to see if it accurately predicts what crisis messages are “messages that matter” (SocialMention)

# Future Recommendations for Research & Practice

- Implications for this research include guidelines for effective crisis communication monitoring through social media platform.
- Implications to tiers & sub categories for key terms within social media
- Social media platforms need to have personalized crisis messages that incorporate the findings from this analysis.
- Convergence of social media and mobile technologies in communicating during crisis
- These guidelines can be applied for all-hazards planning and response activities.





# Current Case: Indiana & KY Tornados (2012)



## Project EPIC Tweak the Tweet: Instructions

Main Event Tag ( <b>Must</b> be included)	Main Category Tags (choose <b>only</b> one)	Location tag (always include if you have location info)	Other Data Tags (choose as many as you need and can fit)
#tornado	#debris #damage #road #linedown #treedown #need #tornado #hail #powerout #wind #shelter  After main category tag, write what is needed/offered or damaged, etc.	#loc  To add location, type #loc, then write your location information, then end with another tag symbol  OR add location anywhere in tweet in lat, long form: 46.8771863,-96.7898034  OR enable geo-location on your phone and Twitter client settings for locating the tweet where you are.	#time #details #photo #src #contact #loc  After data tags, write the info that goes with these tags... i.e. #contact Mary 555-5555 #time 3pm #source @CNN

1. Include an Event Tag
2. Include **one** main category tag
3. Include location info like this... #loc location info #
4. Include as many other data tags as you need and can fit.

### Example Tweets:

#tornado [#your primary tag] information for primary tag #loc gps coordinates #src where the information came from

[#your primary tag] information for primary tag #loc street address #contact whom to contact #tornado

[#your primary tag] information for primary tag #loc place name #more additional information #tornado

# Questions or Comments?

Thank you very much.



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