

Tweeting Uncertainty

During Hurricane Irma

Background

- Hydro-meteorological services and/or emergency management agencies (here: EMAs) inform the public about emerging or ongoing disaster situations (Beneito-Montagut et al., 2013)
- EMAs have to deal with different kinds of uncertainties when communicating about natural hazards, e.g. pathways, affected areas or response actions (Kox et al. 2018)
- Addressing different kinds of uncertain information contributes to disaster management efforts and strengthens EMA's credibility (Hughes & Chauhan, 2015)
- Social media technologies such as Twitter are effective tools to quickly share information about actual situation (Alexander, 2014; Starbird et al., 2010)



Fig. 1: Map of research area

Materials and Methods

- Category 5 hurricane Irma was one of the most powerful hurricanes of recent years (NOAA, 2017)
- EMAs crisis communication regarding hurricane Irma in Florida and North Carolina, United States (Fig. 1)
- Fetching EMAs @NWSMelbourne, @BrevardEOC, @NCEmergency, @JaxReady Twitter data during 09/03/17 till 09/13/17
- Exploratory content analysis of English and Spanish (re)tweets (n = 815) using MAXQDA 12 regarding communication of uncertain information

RQ: How do EMAs handle uncertain information in extreme weather situations as part of their risk and crisis communication strategies?

Results

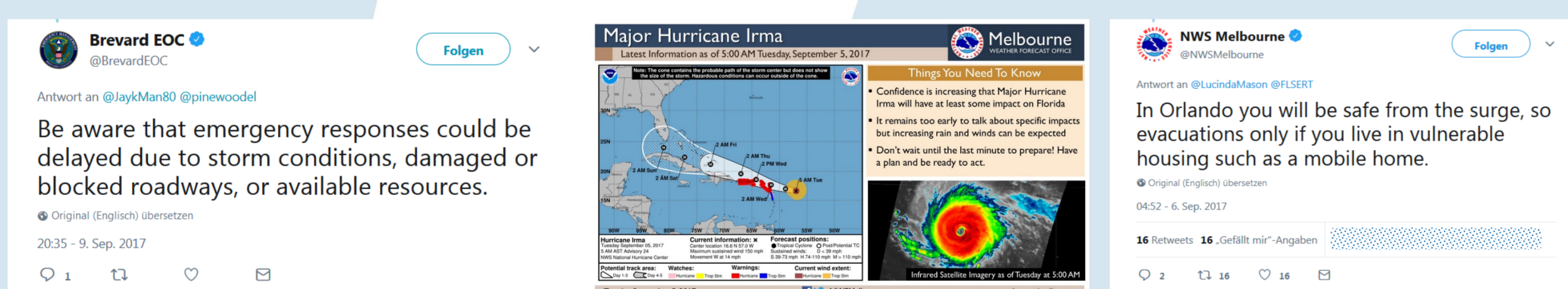
1 # Give process information

- Use time stamps in tweet texts
- Emphasize preliminary data
- Declare what is known (or not known)
- Explain why information is not available
- State when further information/updates will be provided

2 # Use uncertainty phrases

Characteristic	Event	Impact
Intensity	"[...] Strong storm near Harmony; gusts of 40mph possible." (@NWSMelbourne, 09/07/17)	"@NC_Governor Cooper: gusty winds could bring sporadic power outages, esp NC/SC border #IrmaNC" (@NCEmergency, 09/11/17)
Regularity	"4am The sun hasn't even risen, & Ft Pierce has already broken their previous rainfall record for today (1.63"); measuring 3.93" as of now!" (@NWSMelbourne, 09/10/17)	-
Occurrence	"[...] Sustained TS winds will likely begin Sunday morning, finish prep by tonight" (@NWSMelbourne, 09/09/17)	"6am Impacts from Irma to east central Florida have begun. Expect deteriorating conditions today." (@NWSMelbourne, 09/10/17)
Duration Persistence	"We are experiencing near hurricane-force gusts here in Melbourne & across Treasure Coast! Expecting strongest winds over next 6-12 hours!" (@NWSMelbourne, 09/10/17)	"9/8/17 RT @BrevardSchools: Brevard Public Schools closed Monday & remain closed until further notice. #Irma" (@BrevardEOC, 09/08/17)
Location	"All of the FL peninsula is in the cone of uncertainty; the track is toward the west side of the state & additional deviations are possible." (@NWSMelbourne, 09/08/17)	"Dir. Sprayberry: impacts could be felt anywhere in NC; working w/state partners to assist in shelters if needed #IrmaNC #ncwx" (@NCEmergency, 09/07/17)

3 # Provide information about where / what kind of impact should be (not) expected



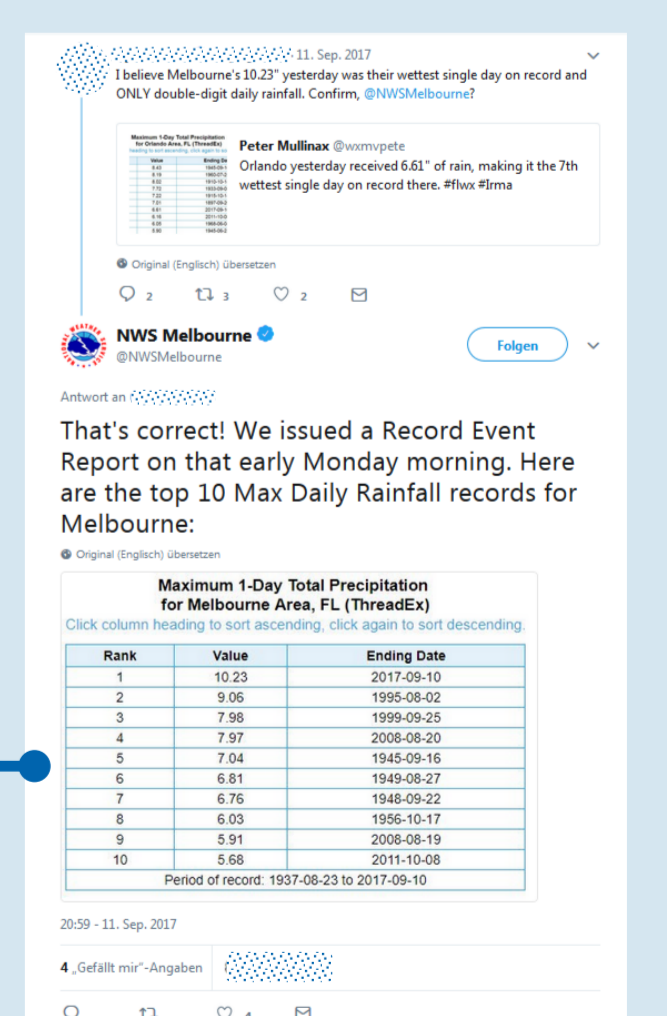
4 # Address rumors using #RumorControl or implement / refer to a rumor control page



Discussion

- EMAs use a mix of different strategies to convey uncertain information regarding extreme weather events such as hurricane Irma
- Range of technical terms (e.g. "cone of uncertainty") might not be known throughout the public
- When using different uncertainty phrases, EMAs should also take recipients' individual perceptions e.g. of probabilities into account

5 # Give information on regularity



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