

Twitter and natural disasters: Crisis communication lessons from the Japan tsunami

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Adam Acar and Yuya Muraki of the Kobe City University of Foreign Studies surveyed and questioned Twitter users and tracked updates from people in the disaster-struck area on the social media site two weeks after the Tohoku earthquake and devastating tsunami of March 11. They hoped to determine what benefits such a system can bring to people involved in a disaster and to those hoping to hear news.

The researchers found that people in directly affected areas tended to tweet about their unsafe and uncertain situation while people in remote areas posted messages to let their [followers](#) know that they are safe. Worryingly, they also found numerous unreliable "retweets" (RTs), where users of the service repeated inaccurate information and that this was one of the biggest information-related problems facing those involved. However, the subjects in the study recommended that Twitter communication could be improved if official hashtags were announced during disasters and the number of retweets for a given hashtag could be limited to avoid the wider spread of disinformation.

The 9.0-scale [earthquake](#) that hit Japan on March 11 at 2:45 PM (local time) was the biggest [quake](#) in Japan's history and the 5th biggest recorded across the globe. The subsequent tsunamis caused by the [tremors](#) caused additional devastation across three coastal prefectures, wiped two towns off the map, and claimed thousands of lives and displaced more than half a million people. At the time, members of the

media reported that Twitter was the only functioning communication tool immediately after the earthquake.

Writing in the *International Journal of Web Based Communities*, the team explains how recently there has been growing interest in the use of social media during disasters as a communications and news dissemination tool. "A wide range of studies suggest that information sharing networks, such as twitter, can be very useful in times of crisis by quickly and effectively disseminating relevant news," the team points out. However, there is often confusion among the public about the reliability of twitter user updates after, disasters, such as the great Tohoku earthquake, the team adds. They have now sought to quantify the problems experienced by users and to find potential solutions that will provide actionable insights for future use of social networking tools during disasters.

Twitter is an instantly updated social media site that provides "a real-time information network that connects you (users) to the latest information about what you (they) find interesting". It can be access via the World Wide Web, the mobile phone text messaging system (SMS) or any of a number of third-party tools used with smart phones, tablet and desktop computers. Once a user posts a message, that message (update) becomes public and can be viewed by anyone.

Estimates put the number of academic papers that have so far discussed Twitter at around 3000, many of those studies point to the important role Twitter has played in quickly disseminating information about world events, such as Barack Obama's presidential campaign, terrorism in Mumbai and other places, Iran street protests and events that have since unfurled in the Middle East, the earthquake in Chile, flooding, forest fires, shooting incidents, and even the crash-landing of a passenger aircraft on the Hudson River in New York. As such, some researchers have suggested that Twitter is more than a communication tool and can function as real-time earthquake detection, election results forecasting,

enterprise microblogging, as well as in word-of-mouth marketing, foreign language learning, celebrity watching and media profiling.

Adam Acar and Yuya Muraki found that Twitter posts in disaster struck areas and the areas that are indirectly affected were somewhat similar. Most of the tweets in disaster -hit areas were warnings, help requests and reports about the environment. Official local authority Twitter accounts set up at the time of the earthquake were particularly useful, well followed and retweeted extensively, especially when warnings of an imminent tsunami were predicted. The team adds updates asking desperately for help were "heart-breaking", while other updates highlighted specific happenings such as the rise and fall of the sea, burning buildings and explosions. However, the biggest problem was the reliability of twitter updates, particularly in calls for help, that were misplaced or lies.

Another problem they uncovered was the low signal-to-noise ratio for messages using hashtags. Hashtags are keywords prefixed with the # symbol that would normally allow users to filter updates of interest. Hashtag misuse led to difficulties in finding important messages in the areas earthquake hit directly. The researchers also found that although many users were concerned by the number of unfounded rumors, there were too few official updates from the government and the mass media

There are three major conclusions that emerge from the study, the team says, although whether or not these would improve the value of Twitter in times of disaster remains to be seen. First, all users should have more responsibility for their tweets. Secondly, everyone should realize that [Twitter](#) is a public communication tool. Thirdly, information sources should be made clearer in updates. They add that appropriate use of hashtags and a method for regulating inappropriate or false retweets might be implemented. Further research is now needed to assess whether or not announcing official hashtags during disasters would solve any of

the problems seen during recent tragic events in Japan.

More information: "Twitter for Crisis Communication: Lessons Learnt from Japan's Tsunami Disaster" in *International Journal of Web Based Communities*, 2011, in press.

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