



Analyzing the impact of natural disasters: Concepts for spatio-temporal analyses of social media data

Jens Kersten, Anna Kruspe, and Friederike Klan
German Aerospace Center (DLR)

Twitter data is known to be a valuable source for rescue and helping activities in case of natural disasters and technical accidents in many countries worldwide. Several methods for tweet filtering and classification are available to analyze social media streams. However, rather than single tweets, analyzing the dynamics of reactions caused by disasters taking into account space and time is likely to reveal even more insights, e.g. regarding local event impacts on population and environment. In turn, this knowledge may help in developing more reliable methods for analyzing social media streams, e.g. for (sub-) event detection and tracking, that contribute to the improvement of disaster risk management strategies. As a starting point for this, suitable approaches for spatio-temporal analyses of Twitter data streams are discussed in this study. Besides the dimensions of time and space, the content of the tweets is also taken into account. Results from applying some of these methods on a representative real data stream will be presented.

A new Twitter data set acquired during Hurricane Florence in September 2018 is analyzed here. Instead of often-applied keyword-based filtering, only geo-located tweets from a specific area of interest were recorded. Even though a high percentage of all published tweets are not geo-tagged, this reduced set might still be a more representative subset of the complete data stream, since messages are not restricted to contain specific keywords or hashtags. In addition to first insights regarding the disaster event gained by applying analysis methods to this data set, directions for future work on that topic will be pointed out.