



Coupling flood forecasting and social media crowdsourcing

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Social and mainstream media monitoring is being more and more recognized as valuable source of information in disaster management and response. The information on ongoing disasters could be detected in very short time and the social media can bring additional information to traditional data feeds (ground, remote observation schemes). Probably the biggest attempt to use the social media in the crisis management was the activation of the Digital Humanitarian Network by the United Nations Office for the Coordination of Humanitarian Affairs in response to Typhoon Yolanda. The network of volunteers performing rapid needs & damage assessment by tagging reports posted to social media which were then used by machine learning classifiers as a training set to automatically identify tweets referring to both urgent needs and offers of help.

In this work we will present the potential of coupling a social media streaming and news monitoring application (GlobalFloodNews - www.globalfloodsystem.com) with a flood forecasting system (www.globalfloods.eu) and the geo-catalogue of the OGC services discovered in the Google Search Engine (WMS, WFS, WCS, etc.) to provide a full suite of information available to crisis management centers as fast as possible.

In GlobalFloodNews we use advanced filtering of the real-time Twitter stream, where the relevant information is automatically extracted using natural language and signal processing techniques. The keyword filters are adjusted and optimized automatically using machine learning algorithms as new reports are added to the system.

In order to refine the search results the forecasting system will be triggering an event-based search on the social media and OGC services relevant for crisis response (population distribution, critical infrastructure, hospitals etc.). The current version of the system makes use of USHAHIDI Crowdmap platform, which is designed to easily crowdsource information using multiple channels, including SMS, email, Twitter and the web we want to show the potential of monitoring floods at the global scale.