Spatio-Temporal Decision Support System for Natural Crisis Management with TweetComP1

Zielinski, Andrea
Fraunhofer Institute of Optronics,
System Technologies and Image Exploitation
Karlsruhe, Germany
andrea.zielinski@iosb.fraunhofer.de

Middleton, Stuart E.
University of Southampton IT Innovation Centre
Southampton, United Kingdom
sem@it-innovation.soton.ac.uk

Öcal NECMİOĞLU
Kandilli Observatory and Earthquake Research Institute
Department of Geophysics
İstanbul 34684 Turkey
ocal.necmioglu@boun.edu.tr

Martin Hammitzsch
Helmholtz-Zentrum Potsdam
Deutsches GeoForschungsZentrum GFZ
Potsdam, Germany
martin.hammitzsch@gfz-potsdam.de

ABSTRACT

This paper discusses the design of a social media analysis system for decision making in natural disasters where tweets are analyzed to achieve situational awareness in earthquake and tsunami events. The system is demonstrated and evaluated using a scenario-based methodology. An empirical study is undertaken to get feedback and further requirements from practitioners working in the field of hazard detection and early warning. The main contribution of the paper is that we propose a framework which builds upon a system for tsunami detection and early warning, developed in the project Collaborative, Complex, and Critical Decision-Support in Evolving Crises (TRIDEC). The system is evaluated by the Kandilli Observatory and Earthquake Research Institute (KOERI) and the Portuguese Institute for the Sea and Atmosphere (IPMA) against official international requirements as well as individual national requirements to incorporate new features and functionalities related to human sensor network analysis, and to fit into existing workflows.

Keywords: Decision-support, web 2.0, social media