

Author's Accepted Manuscript

Early Detection and Information Extraction for
Weather-induced Floods using Social Media
Streams

C. Rossi, F.S. Acerbo, K. Ylinen, I. Juga, P.
Nurmi, A. Bosca, F. Tarasconi, M. Cristoforetti, A.
Alikadic



www.elsevier.com/locate/ijdr

PII: S2212-4209(18)30273-5
DOI: <https://doi.org/10.1016/j.ijdr.2018.03.002>
Reference: IJDRR824

To appear in: *International Journal of Disaster Risk Reduction*

Received date: 1 September 2017
Revised date: 28 February 2018
Accepted date: 1 March 2018

Cite this article as: C. Rossi, F.S. Acerbo, K. Ylinen, I. Juga, P. Nurmi, A. Bosca, F. Tarasconi, M. Cristoforetti and A. Alikadic, Early Detection and Information Extraction for Weather-induced Floods using Social Media Streams, *International Journal of Disaster Risk Reduction*, <https://doi.org/10.1016/j.ijdr.2018.03.002>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Early Detection and Information Extraction for Weather-induced Floods using Social Media Streams

C. Rossi^a, F. S. Acerbo^b, K. Ylinen^c, I. Juga^c, P. Nurmi^c, A. Bosca^d,
F. Tarasconi^d, M. Cristoforetti^e, A. Alikadic^e

^a*Istituto Superiore Mario Boella (ISMB), Torino, Italy*

^b*Politecnico di Torino, Italy*

^c*Finnish Meteorological Institute, Helsinki, Finland*

^d*CELI Language Technology, Torino, Italy*

^e*Fondazione Bruno Kessler (FBK), Trento, Italy*

Abstract

Today we are using an unprecedented wealth of social media platforms to generate and share information regarding a wide class of events, which include extreme meteorological conditions and natural hazards such as floods. This paper proposes an automated set of services that start from the availability of weather forecasts, including both an event detection technique and a selective information retrieval from on-line social media. The envisioned services aim to provide qualitative feedback for meteorological models, detect the occurrence of an emergency event and extract informative content that can be used to complement the situational awareness. We implement such services and evaluate them during a recent weather induced flood. Our approach could be highly beneficial for monitoring agencies and meteorological offices, who act in the early warning phase, and also for authorities and first responders, who manage the emergency response phase.

Keywords: extreme weather, flood, social media, text mining, anomaly detection, classification

1. Introduction

2 It is commonly acknowledged that high impact, extreme weather events
3 occur more frequently and last longer due to climate change. During the last
4 35 years, the average Earth surface temperature has risen about 0.8°C [1].
5 According to the Intergovernmental Panel on Climate Change (IPCC), the

Download English Version:

<https://daneshyari.com/en/article/7471368>

Download Persian Version:

<https://daneshyari.com/article/7471368>

[Daneshyari.com](https://daneshyari.com)