



## **Real-time mapping of earthquake perception areas in the Italian region from Twitter streams analysis**

Luca D'Auria, Vincenzo Convertito, and Flora Giudicepietro

Istituto Nazionale di Geofisica e Vulcanologia, sezione di Napoli, Italy (luca.dauria@ov.ingv.it)

Here we present a software system, named TwiFelt, aimed at providing real-time earthquake perception maps from the analysis of Twitter streams. The software collects geotagged tweets (i.e. tweets having a geographic reference) containing selected keywords, performs a statistical interpretation and provides an interactive graphical representation. The system consists in: a Twitter stream parser, a relational database and an interactive web interface available at: <http://twifelt.ov.ingv.it>. The latter provides a graphical map rendering, which shows shaded overlays giving and indication of the location and the extension of the area where an earthquake has been felt. Currently the analysis is limited to the Italian region, but it can be easily extended to a wider region.

The main goal of this work is to identify empirical threshold values of the ground motion parameters, which would allow establishing if the earthquake has been actually perceived or not. To this aim we first perform a statistical analysis of the whole database, currently containing more than 10000 records, to infer the spatial and temporal distribution of tweets. Then we correlate the radial distribution of tweets, related to a given earthquake, with predicted (by GMPE) and observed ground motion parameters (e.g. PGA, PGV,  $I_{MM}$ ) from a dataset of 212 events ( $M \geq 3$ ) occurred on-land in Italy from Nov. 2012 to Dec. 2013.