

Programme: NH9 - Natural Hazards and Society (Risk, Vulnerability, reinsurance, Education, Communications, etc)

The rise of big (crisis) data and ‘digital’ humanitarians: Observations and opportunities from an Applied Geohazard Scientist’s perspective

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Abstract:

Applications developed using Web 2.0 technologies, such as social media sites, blogs, wikis etc., have had a profound impact on people’s ability to interact and collaborate, and to generate and share content publically through virtual environments. During recent natural disasters there has been an impressive response effort, through web 2.0 technologies, from citizens (digital humanitarians). Tools have been developed overnight to help people find food, shelter or missing relatives or friends. There are examples of how social media, or a mechanism to connect people together, enables people to share feelings and better cope with their situation knowing that others are also experiencing the same problems.

From an Earth scientist’s perspective, we are generally (initially at least) remote from the disaster zone but are frequently called upon to provide advice for government(s) and humanitarian response agencies. Social media offers the potential to enhance risk-based models, real-time monitoring of vulnerability and hazard-related impacts, as well as to provide insights into local resilience which can help disaster preparedness and recovery, all of which could inform the scientific response and improve situational awareness.

Whilst there are opportunities to obtain knowledge from social media, there are also many challenges. Obtaining reliable content that is accurately geo-located information is just one concern; ensuring that the information is not skewed by the sample demographic is another. There are also a

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number of ethical considerations around using this data that need to be explored. Whilst, the use of machine learning algorithms (e.g. Support Vector Matric and Neural Networks) and big data tools (e.g. TensorFlow, Apache Spark or dispel4py) can help resolve some of the challenges around usefulness of content, not all of the challenges are as easily resolved.

This presentation explores the usefulness of such social media mining in the applied natural geosciences, using the BGS GeoSocial tool to provide illustrative examples, and discusses some of the opportunities and challenges faced in more detail.

Key words: hazard; vulnerability; risk; geological; UK; impact; society

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