SSS01-06 Room:102B Time:May 24 15:30-15:45

Post-Disaster Damage Mapping as Tool for Risk Testing

SCHORLEMMER, Danijel[1*] ; BEUTIN, Thomas[1] ; FANSELOW, Florian[1]

[1]GFZ German Research Centre for Geosciences, 14473 Potsdam, Germany

The Post-Disaster Damage Mapping is part of the Global Dynamic Exposure project, in which we interpret and visualize crowd-sourced and open geographic data and provide guidance to what is called the crowd in data collection. We base our work on OpenStreetMap (www.openstreetmap.org) because of the fully open geographic data and the availability of open-source software for processing the data. Because of the immense number and variety of buildings, exposure- and vulnerability-related data cannot be compiled by a small group. Furthermore, the dynamic aspect of risk, namely rapid urbanization, requires monitoring of exposure and vulnerability indicators, again a task that can only be achieved when distributing the work onto many shoulders.

The objective of the Global Dynamic Exposure project is to provide a high-resolution (on the building-by-building level) and dynamic (low-latency) exposure model for the world. It will build upon the Global Exposure Database for the Global Earthquake Model (GED4GEM) and augment it where crowd-sourced and open data exists in high quality and high density. The exposure and vulnerability indicators are derived from geographic data (e. g. building footprint, land use), building properties (e. g. type of building, occupancy), and semantic interpretation (e. g. regional types of architecture, cultural habits). Once a target area is fully captured in OpenStreetMap, further changes in the dataset indicate the change of building stock or the process of urbanization. This dynamic aspect of data collection is used for the Post-Disaster Damage Mapping. Here, the so-called Humanitarian OpenStreetMap Team (hot.openstreetmap.org), a crowd-sourced disaster mapping effort, is providing information about the status of buildings and roads in the aftermath of a disaster. These data is retrieved mainly from aerial imagery but also from mappers on the ground.

Combining the exposure and vulnerability data of buildings prior to a natural disaster with the post-disaster damage status will provide a new dataset for better understanding risk and the societal impact of a catastrophe, but will also for the first time offer an independent dataset for testing risk estimates.

Keywords: risk testing, seismic hazard, seismic risk, exposure, vulnerability