Geophysical Research Abstracts
Vol. 18, EGU2016-15163, 2016
EGU General Assembly 2016
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Application of crowd-sourced data to multi-scale evolutionary exposure and vulnerability models

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Seismic exposure, defined as the assets (population, buildings, infrastructure) exposed to earthquake hazard and susceptible to damage, is a critical -but often neglected- component of seismic risk assessment. This partly stems from the burden associated with the compilation of a useful and reliable model over wide spatial areas.
While detailed engineering data have still to be collected in order to constrain exposure and vulnerability models, the availability of increasingly large crowd-sourced datasets (e. g. OpenStreetMap) opens up the exciting possibility to generate incrementally evolving models. Integrating crowd-sourced and authoritative data using statistical learning methodologies can reduce models uncertainties and also provide additional drive and motivation to volunteered geoinformation collection. A case study in Central Asia will be presented and discussed.