APPROACHES OF SEISMIC VULNERABILITY ASSESSMENTS IN NEAR REAL TIME SYSTEMS

Nina Frolova (1), Valery Larionov (2), Jean Bonnin (3), and Alexander Ugarov (4)

(1) RAS, Seismological Center of IGE, Moscow, Russian Federation (frolova@esrc.ru), (2) Moscow High Technical University named after Bauman, Moscow, Russian Federation (lar@esrc.ru), (3) Institute of Physics of the Earth, University of Strasbourg, Strasbourg, France (jean.bonnin@unistra.fr), (4) Extreme Situations Research Center, Moscow, Russian Federation (garo@esrc.ru)

Data on seismic vulnerability of existing building stock and other elements at risk are rather important for near real time earthquake loss estimations by global systems. These data together with information on regional peculiarities of seismic intensity attenuation and other factors contribute greatly to the reliability of strong event consequences estimated in emergency mode.

There are different approaches for vulnerability functions' development and the empirical one is most often used. It is based on analysis of engineering consequences of past strong events when well documented descriptions of damage to different building types and other elements at risk are available for the earthquake prone area under consideration. In the case such data do not exist the information from macroseismic scales may be used. Any approach of vulnerability functions' development requires the proper classification of buildings and structures under consideration. According to national and international building codes, as well as macroseismic scales different buildings' classifications exist. As a result the global systems, such as Extremum and PAGER, as well as GEM project make use of the non-unified information on building stock distribution worldwide. The paper addresses the issues of buildings' classification and city models in terms of these classifications. Distribution of different buildings types in Extremum and PAGER/GEM systems is analyzed for earthquake prone countries. The comparison of city models revealed significant differences which influence greatly earthquake loss estimations in emergency mode. The paper describes the practice of city models' development which make use of space images and web technology in social networks. It is proposed to use the G8 country (and other) initiatives related to open data and transparency aimed at improving building stock distribution and global population databases.