

On the Development of a Homogenized Earthquake Catalogue for Northern Algeria

Authors : I. Grigoratos, R. Monteiro

Abstract : Regions with a significant percentage of non-seismically designed buildings and reduced urban planning are particularly vulnerable to natural hazards. In this context, the project ‘Improved Tools for Disaster Risk Mitigation in Algeria’ (ITERATE) aims at seismic risk mitigation in Algeria. Past earthquakes in North Algeria caused extensive damages, e.g. the El Asnam 1980 moment magnitude (M_w) 7.1 and Boumerdes 2003 M_w 6.8 earthquakes. This paper will address a number of proposed developments and considerations made towards a further improvement of the component of seismic hazard. In specific, an updated earthquake catalog (until year 2018) is compiled, and new conversion equations to moment magnitude are introduced. Furthermore, a network-based method for the estimation of the spatial and temporal distribution of the minimum magnitude of completeness is applied. We found relatively large values for M_{c} , due to the sparse network, and a nonlinear trend between M_w and body wave (m_b) or local magnitude (M_L), which are the most common scales reported in the region. Lastly, the resulting b-value of the Gutenberg-Richter distribution is sensitive to the declustering method.

Keywords : conversion equation, magnitude of completeness, seismic events, seismic hazard

Conference Title : ICACEE 2018 : International Conference on Advances in Civil and Environmental Engineering

Conference Location : Rome, Italy

Conference Dates : July 23-24, 2018