

Abstract

Located at the North-Eastern part of Algeria (Tellian Atlas), Constantine has crucial administrative, economic, scientific and cultural importance. It has continuously experienced significant urban evolutions during the different periods of its history. The city is located in an active seismic region within Algeria and has been struck in the past by several moderate and strong earthquakes. The strongest earthquake recorded since the beginning of instrumental seismology took place on October 27, 1985 with a magnitude $M_S = 5.9$. Constantine presents a high seismic risk, because of its dense housing and high population density (2,374 inhabitants/km²). This requires a risk assessment in order to take preventive measures and reduce the losses in case of potential major earthquake. For this purpose, a scenario based approach is considered. The building damage assessment methodology adopted for the Algerian context is adapted from HAZUS approach. In the present case, the effective Algerian seismic code response spectrum (RPA 99/2003) is considered as a seismic hazard model. The prediction of the expected damages is performed for a set of almost 29,000 buildings