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[Abstract Title]

Seismic Hazard Assessment in Northeast part of Algeria

[Abstract]

This work presents a seismic hazard evaluation and develops an earthquake catalogue for the Northeast of Algeria region over the period from 1357 to 2019. The study contributes to the improvement of seismic risk management by evaluating the seismic hazards in Northeast Algeria. A regional seismicity analysis was conducted based on reliable earthquake data obtained from various agencies (CRAAG, IGN, USGS and ISC). All magnitudes (Ms, Ml, Mb) and intensities (I0, IMM, IMSK and IEMS) were converted to Mw magnitudes using the appropriate relationships. Earthquake hazard maps were created for the Northeast region. These maps were estimated in terms of spectral acceleration (SA) at periods of 0.1, 0.2, 0.5, 0.7, 0.9, 1.0, 1.5 and 2.0 sec. Five seismogenic zones are proposed. This new method differs from the conventional method because it incorporates earthquake magnitude uncertainty and mixed datasets containing large historical events and recent data. The method can be used to estimate the b-value of the Gutenberg-Richter relationship, annual activity rate λ(M) of an event and maximum possible magnitude Mmax using incomplete and heterogeneous data files. In addition, an earthquake is considered a Poisson with an annual activity rate λ and with a doubly truncated exponential earthquake magnitude distribution.

[Keywords]

Seismic hazard, Seismicity, Earthquake catalogue, Constantine, PGA, b-value.