



ID: P5.2-033

Type: e-Poster

And Seismic Hazard Assessment In West Africa

Thursday 1 July 2021 11:45 (15 minutes)

Lack of in-depth seismic hazard studies (SHS) for West Africa (WA) has negatively impacted planning and disaster risk management. Using modern techniques for SHS, this study aims to address such challenges. WA's earthquake catalogue was updated from various data sources including CTBTO. The seismotectonic setting of WA is assumed to be either, a stable continental crust or a shallow crustal seismicity. Therefore, we investigated both scenarios and compared results. For each, three different ground-motion models (GMMs) were applied and combined to produce each hazard map using logic tree formalism with equal weights. Earthquake recurrence parameters were computed for the entire WA region and five created seismic source zones within WA. The computed b-value, activity rates λ , regional maximum possible magnitudes m_{max} for the five zones and those for the entire region ranged from 0.84 to 1.0, 0.3–2.1, 5.2–7.0; and 0.77, 4.1, 7.2, respectively. The b-value of 0.77 falls within the generally accepted range for tectonic seismicity. The confirmation from our study that WA is actually characterised by stable continental crust is a monumental contribution. The highest hazard levels were observed in parts of Ghana, Guinea, and the Cameroon Volcanic Line region, ranging between 0.02 g and 0.03 g.

Promotional text

CTBT promotes civil and scientific applications of its techniques and data. Our study engendered revolution in West Africa by contributing in supporting exchange of knowledge, data and promotion of healthy collaboration with larger scientific community in line with CTBT's goals.

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Session Classification: T5.2 e-poster session

Track Classification: Theme 5. CTBT in a Global Context: T5.2 - Experience with and Possible Additional Contributions to Issues of Global Concern such as Disaster Risk Mitigation, Climate Change Studies and Sustainable Development Goals