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RE-LOCATION, GT EVENTS IDENTIFICATION AND PSHA IN PARTS OF SUB-SAHARAN AFRICA TO BOOST CTBT'S VERIFICATION CAPABILITY AND ITS SCIENTIFIC APPLICATIONS

Phases from regional and local earthquakes contribute significantly to velocity model errors on the accuracy of earthquake location. This, the dearth of data, poor network of seismic stations, poorly located and well-defined events, absence of a reliable velocity model etc., have hindered meaningful seismological research in parts of sub-Saharan Africa. In this study, prominent events were relocated and some which include the 2009 Benin event, 2017 Botswana earthquake, 2015 Namibian event, 2016 and 2018 events in Nigeria were screened for Ground Truth events using Geotool, Regional Seismic Travel Times and iloc stringent procedures. Secondly, in collaborations with relevant institutions, probabilistic seismic hazard assessment was carried out using data from NDCs, local seismic stations, and ISC to compute earthquake hazard parameters. The results show a b-value of 0.79 +- 0.05, activity rate of 3.047 +- 0.747, Mmax of 6.88 +- 0.26 and PGAs for a 10% probability of exceedance in 50 years range of 0.05 – 0.2g. The results aim to contribute to the regional velocity model development, enhancement of verification compliance with the CTBT and its civil and scientific applications, improvement of seismicity, seismic hazard assessment, and seismotectonic outlooks of the entire region covered.

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