ID: **P1.2-171** Type: **e-Poster**

use of Seismological, Geodetic and Infrasound techniques for novel integrated monitoring scheme in Nigeria

Tuesday, 29 June 2021 11:45 (15 minutes)

Nigeria lies within the West African sub-region and the country is believed to be aseismic in nature. Despite this view by prominent geoscientists, the country has witnessed both historical and instrumental earthquakes since 1933. The recent recorded chains of events with moment magnitudes ranging from 3.0 to 3.4 in Nigeria, were located in Kaduna state and Abuja. Reasons which include shallow faults reactivation by hydraulic fracturing, anthropogenic causes, etc., have been adduced to the recurrent earth tremors in Nigeria. As the events are of small to medium magnitudes, their vibrations felt in different parts of the country were not recorded by the scanty existing seismic stations. This paper therefore, presents a novel integrated approach towards understanding Nigeria's seismicity, and enhanced monitoring of seismic hazard through improved recording capability of earthquakes. It outlines a detailed scheme on densification of seismographs collocated with GPS, and deployment of the advanced Infrasound equipment to strategic areas where earth vibrations are frequently observed in Nigeria but not recorded by seismic equipment, etc. The realization of the monitoring scheme would not only assist Nigeria in seismic risk mitigation and holistic planning, but will promote collaboration with the CTBTO and other key partners.

Promotional text

This study supports the wider civil and scientific applications of CTBT techniques by adopting one of its tools for verification (Infrasound), in addressing seismic hazard challenges in Nigeria and boosting awareness of the powerful technology to broader scientific community.

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Session Classification: T1.2 e-poster session

Track Classification: Theme 1. The Earth as a Complex System: T1.2 - The Solid Earth and its Structure