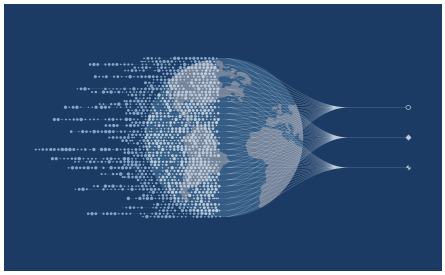

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Through Proximity: Enhancing Seismic Event Relocation with Local and Regional Networks

Accurate seismic event location is essential for Comprehensive Nuclear-Test-Ban Treaty (CTBT) verification. This study presents the relocation of a seismic event detected on 22 June 2024, using data from a temporary local network of 20 stations in Nakuru, Kenya, combined with approximately 8 regional stations. The event, initially reported at 2.2896° S, 39.1603° E by IRIS/USGS, varied significantly when analysed with different data sets: regional stations placed it at 0.289° N, 36.077° E, while the local network shifted it to -3.524° S, 37.894° E. The most refined location, using all available stations, was -2.121° S, 37.857° E. Data analysis was performed using Geotool and Seisan to achieve an integrated approach, reducing location uncertainty and enhancing depth estimates. This work demonstrates the critical role of combining local and regional data in improving event accuracy and verification capabilities, aligning with SnT2025's goals of fostering innovation, strengthening cooperation, and building resilient scientific networks for global security.

E-mail

vincentnjenga15@gmail.com

In-person or online preference

Primary author: WAINAINA, Vincent (University of Nairobi)

Presenter: WAINAINA, Vincent (University of Nairobi)

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