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Virtual Technology to Empower Youth and Early Career Scientists for CTBT

The integration of virtual technologies offers transformative potential for advancing the CTBT's objectives, particularly in building technical capacity among youth and early career scientists. By leveraging tools such as seismic and infrasound data analysis platforms, remote sensing simulations, and interactive virtual labs, the CTBTO can provide accessible, scalable training in nuclear-test-ban verification. These tools deliver hands-on, immersive learning experiences that bridge theory with practical application, enhancing the operational efficiency of verification activities.

This study highlights how virtual tools empower youth and early career scientists, especially from developing regions, by ensuring equal access to high-quality training. Their scalability enables training large groups simultaneously, with reusable materials supporting continuous learning for future cohorts. This approach fosters a skilled, sustainable workforce prepared to uphold the CTBTO's verification mandate.

Innovative methods, such as virtual reality modules simulating On-Site Inspection (OSI) scenarios, collaborative platforms for real-time data analysis, and structured online learning, further enhance training impact. These strategies promote technical proficiency while fostering a diverse and inclusive community of experts. By embracing virtual technologies, the CTBTO ensures the CTBT's sustained relevance, building resilience and continuity in its monitoring and verification regime for future generations

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