

CTBT: Science and Technology Conference 2023 - SnT2023

Monday, 19 June 2023 - Friday, 23 June 2023

Hofburg Palace & Online

Scientific Programme

Themes and Topics of SnT2023

Keywords indicate what might fit under the Topic, including priorities. Possible submissions are not limited to the keywords.

Theme 1. The Earth as a Complex System

T1.1 The Atmosphere and its Dynamics

Keywords: Infrasound wave propagation and attenuation, transport of radionuclides, global circulation, volcanoes, climatology, meteorology, noise sources

T1.2 The Solid Earth and its Structure

Keywords: Seismicity, earthquake observatories, seismic and acoustic wave speed and attenuation, tectonics, locating seismic disturbances, subsurface properties, pathways for radionuclides

T1.3 The Oceans and their Properties

Keywords: Oceanography, hydroacoustics, ocean observatories, long-range propagation, refraction and diffraction, 2D and 3D models, T-phase modelling, acoustic coverage, ocean acoustic tomography and thermometry, undersea volcanoes, tsunamigenic events, soundscapes, marine mammals

T1.4 Multi-Discipline Studies of the Earth's Subsystems

Keywords: Data analysis, modelling, physics, waveform data fusion, phase conversion, coupling across interfaces, 2022 Hunga Tonga Hunga Ha'apai eruption, interference between anthropogenic aspects and the earth's system processes

Theme 2. Events and Nuclear Test Sites

T2.1 Characterization of Treaty-Relevant Events

Keywords: Democratic People's Republic of Korea announced tests, detection, understand the full extent of signals that may be generated by a nuclear explosion, location in time and space, analysis, characterization of the source, discrimination, screening criteria, differentiate nuclear tests from other human-made or natural events

T2.2 Challenges of On-Site Inspection

Keywords: Observables that may be expected after a nuclear test, how these could be identified as geophysical, radioactive, temperature or other anomalies or artefacts of testing, surface and subsurface features, site and event characterization including experience from the past, identify and distinguish observables generated by historic and recent tests

T2.3 Seismoacoustic Sources in Theory and Practice

Keywords: Earthquakes, explosions, signals being emitted, anomalies, signals that could be confused with those from a nuclear explosion

T2.4 Atmospheric and Subsurface Radionuclide Background and Dispersion

Keywords: Natural and human-made sources of radioisotopes, release of radionuclides, atmospheric transport modelling, anomalies of atmospheric radioactivity, isotopic ratios that could be confused with those from a nuclear explosion, radionuclide migration

T2.5 Historical Data from Nuclear Test Monitoring

Keywords: Historical records, digitizing, archive preservation, discrimination, metadata, event bulletin, lessons learned for current monitoring and future on-site inspection, data for training and exercises

Theme 3. Monitoring and On-Site Inspection Technologies and Techniques

T3.1 Seismic, Hydroacoustic and Infrasound Technologies and Applications

Keywords: Forwarding of continuous and segmented data, data assimilation, design of sensor systems, advanced sensor, novel technologies

T3.2 Radionuclide Technologies and Applications

Keywords: Sampling and sample processing, data acquisition, particulate sample systems, gamma-gamma coincidence counting, new generation noble gas systems, radionuclide laboratories

T3.3 On-Site Inspection Techniques

Keywords: Visual observations, remote sensing including multi-spectral, satellite imagery, unmanned measurement platforms, measurements of radioactivity and energy resolution analysis, environmental sampling and analysis in mobile and field based facilities, seismic and non-seismic geophysical techniques, drilling, equipment

T3.4 Integrating Data from Different Monitoring Technologies

Keywords: Fusion of data, large data analysis including supplementary data like wind fields, other data to supplement International Monitoring System data for expert technical analysis, diverse sources of remotely sensed data, augmented reality

T3.5 Analysis of Seismic, Hydroacoustic and Infrasound Monitoring Data

Keywords: Signal processing, data analysis algorithms, reduce analyst workload, artificial intelligence, bulletin quality, new approaches, adaptation and integration of methods used in other fields

T3.6 Analysis of Radionuclide Monitoring Data

Keywords: Spectrum calibration and analysis algorithms, enhance quality of automated processing, reduce analyst workload, artificial intelligence, estimation of radionuclide concentrations from known sources, improve event screening, Nuclear Explosion Signal Screening Open Intercomparison Exercise

Theme 4. Sustainment of Networks, Performance Evaluation, and Optimization

T4.1 Performance Evaluation of the International Monitoring System and On-Site Inspection and their Components

Keywords: Performance metrics, network coverage, data availability, quality and timeliness, resilience, lessons learned from the COVID-19 pandemic, preparedness exercises, feedback on International Data Centre products and services, lessons learned from On-Site Inspection build-up and field exercises, national operations and procedures

T4.2 Systems Engineering for International Monitoring System and On-Site Inspection

Keywords: Power systems, system refurbishment and modernization, communication infrastructure, sensor network design and operation

T4.3 Enabling IT Technologies

Keywords: Data protection, cyber security for Treaty monitoring and on-site inspection, accessibility of data, Internet of Things, authentication of samples, simulation, computational models

T4.4 International Monitoring System Sustainment

Keywords: Stations, laboratories, global communications infrastructure, repair, predictive and preventative maintenance, life cycle, causes of failure, state-of-health parameters, recapitalization, improvements to efficiency and cost effectiveness, reliability and security

T4.5 On-Site Inspection Team Functionality

Keywords: Methodology, concept for operations and building capacities, health and safety of inspectors, training, table-top and build-up exercises, equipment maintenance, sustainment of OSI readiness

Theme 5. CTBT in a Global Context

T5.1 CTBT Science and Technology Policy

Keywords: Supporting countries' position on CTBT, role of SnT towards entry-into-force of the CTBT, and lessons learned from/to other arms control agreements and arrangements, multilateralism, broader context of international organizations, reinforcing confidence building, role of National Data Centres, evidence-based policy making, expert advice to national authorities, science-policy interface, innovative solutions within the framework of the CTBT

T5.2 Synergies with Global Challenges

Keywords: Civil and scientific applications of International Monitoring System data, natural hazards, disaster risk reduction, tsunami early warning, climate change studies, sustainable development goals, nuclear and radiological emergencies, international collaboration, CTBTO virtual Data Exploitation Centre (vDEC)

T5.3 Regional Empowerment

Keywords: Capacity building and training, technical assistance, regional networking, cooperation among National Data Centres, multilingualism

T5.4 Outreach

Keywords: Treaty advocacy, education, science communication, public information, raising awareness and understanding, outreach initiatives, human resources development, CTBTO Youth Group, next generation of experts, diversity and gender equality

Invited talks

PTS talks

Panel discussion

Side Events