A Global Scientific Endeavour: The International Scientific Studies Project

by Yvonne Yew

Hydroacoustic technology first evolved at the beginning of the 20th century to increase the safety of sea travel and was soon used for submarine navigation and detection. Nowadays, it also helps in the research of whale populations and their migration patterns, in climate change studies and in tsunami warning systems.

This is one of the cutting-edge technologies – together with seismology, infrasound and radionuclide monitoring – that the Comprehensive Nuclear-Test-Ban Treaty (CTBT), which bans all nuclear explosions on Earth, uses to monitor the planet for evidence of Treaty violations. These four technologies are part of the CTBT's verification regime, which has been established to ensure compliance with the Treaty. The resulting verification data also offer a wide range of civil and scientific applications with the potential to contribute significantly to sustainable development, knowledge expansion and human welfare.

Launched in March 2008, the International Scientific Studies (ISS) project involves a series of independent scientific studies and assessments designed to address the readiness and capability of the CTBT to detect nuclear explosions worldwide. Progress made in all four technologies over the last ten years will be highlighted. The project will examine the performance of the CTBT's global verification system and its ability to detect and locate observed events. It will also evaluate the timeliness, quality and quantity of data which are produced, transmitted, processed and distributed and the effective use of the data for potential civil and scientific applications.

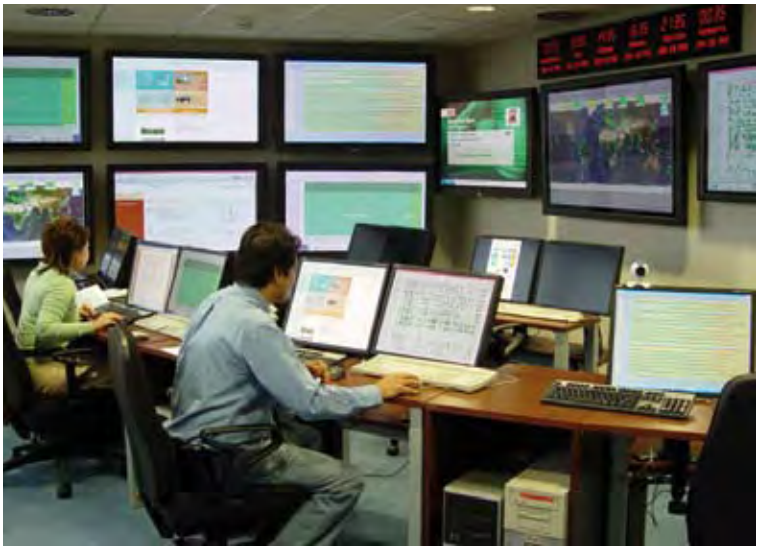
> "To cooperate with science is not a luxury that we can have or not, but a necessity for the long-term sustainability of this organization."
>
> Ola Dahlman, Special Advisor on the ISS project

The project is particularly important since the CTBT's verification regime must be fully operational by the time the Treaty enters into force.

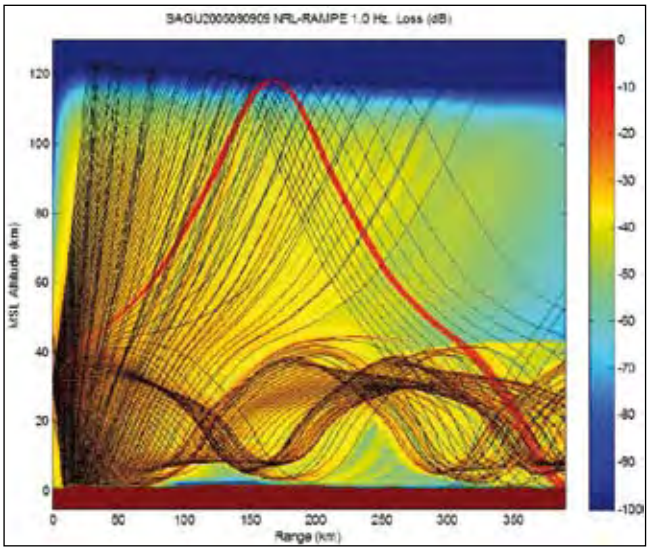
Global undertaking

The project is a global undertaking that is open to experts and institutions from around the world. The CTBTO is the facilitator and coordinator of the project but will not be performing the evaluation. This will be the task of the international scientists and institutions participating in the project. International participation is essential in order to assess the CTBT's verification regime both independently and credibly. The studies and assessments will be carried out between 2008 and 2009, culminating in a final report highlighting the key findings. These findings will also be presented at a large scientific conference in Vienna in June 2009.

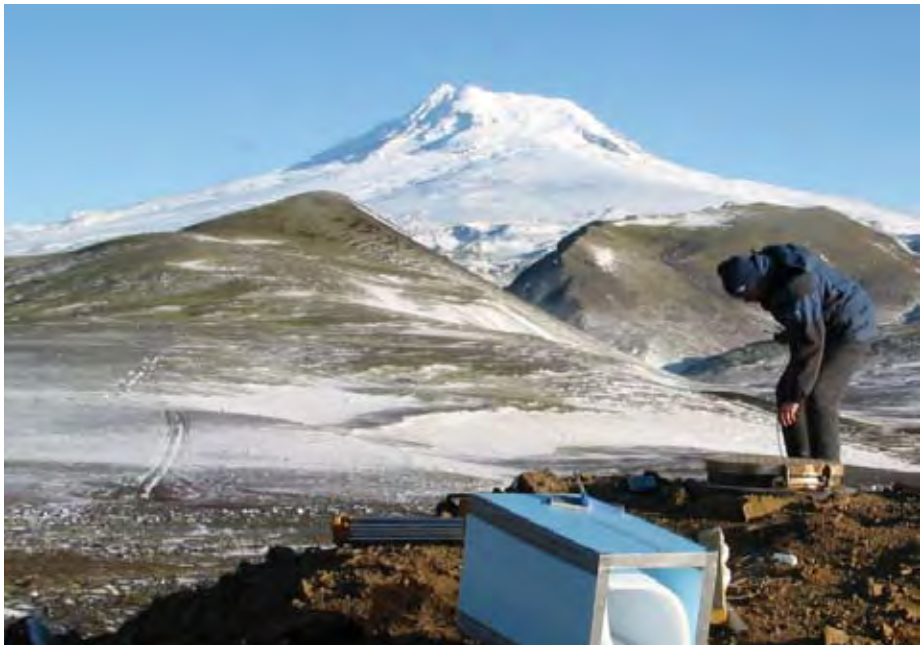
This will be a major priority for the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty



OPERATION CENTRE AT THE IDC, CTBTO HEADQUARTERS, VIENNA, AUSTRIA



INFRASOUND PROPAGATION



SEISMIC STATION AT JAN MAYEN, NORWAY

Organization (CTBTO) in its 2009 calendar. Keynote addresses across relevant disciplines, presentations, round-table discussions and poster sessions are envisaged at the conference. The conference results will be published in August 2009 and its comprehensive findings could assist Member States in their assessment of the verifiability of the Treaty.

Capacity building

It is the CTBTO Member States that are responsible for making an assessment of the data received from the CTBTO's International Data Centre (IDC). As such, it is important for States to increase their technical knowledge base, as well as develop the facilities needed to participate fully in the implementation and monitoring of the Treaty. In maintaining and developing the CTBT as a global Treaty, the ISS project contributes to the capacity building potential of Member States.

Civil and scientific benefits

There are many potential applications of the CTBT's verification data in addition to those mentioned earlier. These include research on ocean processes and marine life; volcanic eruption monitoring for aviation safety; and research on the structure of the Earth, its oceans and the atmosphere. By rapidly acquiring and disseminating data on earthquakes, especially tsunami-generating earthquakes, seismic data can also assist in disaster management and response efforts, thus helping to save lives.

For CTBT verification data and technologies to be used most effectively for civil and scientific purposes, the exchange of ideas needs to be encouraged. An on-going dialogue with the scientific community helps raise awareness about the considerable scientific and technological advances which are of relevance to the CTBT. An analysis of these developments in relation to the establishment of the Treaty's verification regime is of immense importance. Through the ISS project, this mutually beneficial relationship between the CTBTO and the global scientific community is being developed and strengthened continuously.

International interest

Several phases have been planned for the ISS project leading up to the 2009 Conference. The Planning Meeting took place in March 2008 and concluded the first phase of the ISS project. Over 100 experts and officials from 33 countries participated, reflecting the great interest generated by the project. The meeting discussed scientific work on eight topic areas that were identified as relevant to the ISS studies: system performance, seismology, hydroacoustics, infrasound, radionuclides, atmospheric transport modelling, on-site inspections, and data mining.

The ISS has now progressed beyond its planning phase. Scientific studies and research projects are currently being undertaken by the participating scientific institutions. Several planned ISS-related workshops and PTS activities will also feed into the ISS process, including the findings related to the On-Site Inspection Integrated Field Exercise (IFE08) that is taking place in September 2008, at Semipalatinsk, Kazakhstan (*see article on page 14*).

The ISS project is an inclusive and dynamic process. It continues to remain open to experts and institutions with relevant interests in the Treaty's verification technologies. ■

Yvonne Yew is a consultant with the CTBTO working on the ISS project. Prior to this, she was a career diplomat with the Singapore Foreign Service covering regional and multilateral issues including the International Atomic Energy Agency's Board of Governors meetings from 2004 to 2006. ■