

The International Scientific Studies (ISS) project: Facilitating scientific collaboration

by Ola Dahlman

Back in the 1970s, twenty years before the Comprehensive Nuclear-Test-Ban Treaty (CTBT) opened for signature, scientists from around the world played a key role in defining the Treaty's verification regime.

The Group of Scientific Experts (GSE) was established at the Conference on Disarmament in Geneva, a multilateral negotiation forum, and started to design and test a seismological global system for the verification of a comprehensive nuclear test ban in 1976. The GSE's system was also used as a model for all of the CTBT's monitoring technologies.

The CTBT, whose verification regime is the most complex and extensive ever created for a multilateral disarmament and non-proliferation treaty, uses advanced science and technology in a large number of disciplines. As well as developing the technical aspects of the Treaty, scientists have played an equally crucial role in implementing it either as members of the working group on verification issues of the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) or as CTBTO staff members.

Establishing and maintaining the CTBT's verification regime

One of the CTBTO's overriding goals is to establish and maintain a credible verification regime as prescribed by the Treaty. When the Treaty enters into force, the CTBTO must be able to:

- Maintain a viable and professional organization. This in turn requires that the CTBTO can recruit and retain highly professional staff members.
- Provide Member States with data products that meet high international standards.
- Operate and maintain the International Monitoring System (IMS) and perform the Treaty's International Data Centre (IDC)

data analysis in a cost – effective way whilst meeting high quality standards.

- Further increase the readiness to conduct on-site inspections (OSI), including the development of OSI inspection technologies.

CTBTO must stay attuned to scientific and technological developments

To provide confidence and credibility, the CTBTO must be able to match the performance and quality of any national authority. The CTBTO must thus stay attuned to scientific and technological (S&T) developments and be able to incorporate such developments as appropriate.

Close cooperation with the scientific community is thus of strategic importance to the CTBTO, and the International Scientific Studies (ISS) project is a concerted effort to promote such cooperation. The project, which was launched in March 2008, has a long- and a short-term goal.

Long-term goal: Strategic partnership between CTBTO and the scientific community

The long-term goal of the ISS project is to develop a strategic partnership with the scientific community. The CTBTO has a number of scientists among its staff but it is not an organization tasked to carry out research; it has benefited and will continue to gain from S&T developments carried out at universities, research organizations and industries.

As well as keeping abreast of these developments, the CTBTO also needs to integrate knowledge from several disciplines into its operational and data analysis procedures and assess the implication of such new developments



SCIENTIFIC EXPERTS AND REPRESENTATIVES PARTICIPATING IN THE FIFTH SESSION OF THE AD HOC GROUP OF SCIENTIFIC EXPERTS, HELD IN GENEVA, FEBRUARY TO MARCH 1978.

to its core functions. Based on such assessments, the CTBTO might decide to develop, test and implement new procedures or system components with industries on a commercial basis as well as with universities and research organizations.

A close relationship with the scientific community will also facilitate the recruitment of staff members with relevant scientific backgrounds.

Short-term goal: Evaluating the CTBT's verification regime

The project's short-term goal is to evaluate the capability and readiness of the CTBT's verification regime, both the IMS and the OSI regime, and to address the implications of the most significant S&T developments since the Treaty opened for signature in 1996. The assessments are conducted by scientists and scientific institutions worldwide; the CTBTO merely provides a coordinating and secretariat role.

We have witnessed not only gradual development in all areas but also some dramatic ones. Noble gas monitoring stations have now been developed and deployed in many places around the globe and the first



ever results from such measurements on a global scale are becoming available. These measurements may dramatically enhance the deterrence capability of the CTBT's verification regime.

In the field of infrasound, the first ever global network has started to provide data that form the basis for the re-emergence of a science that declined in popularity when atmospheric nuclear testing ended in 1980 until interest was revived with the establishment of the IMS's infrasound stations. Infrasound monitoring might also provide a unique insight into the properties of the atmosphere with applications beyond CTBT monitoring.

ISS project builds on efforts by scientists around the world

The ISS project is a new experience for the CTBTO as most of the activities take place independently and outside the organization. The project also benefits from the broad

participation of the scientific community. In many ways the ISS project's method of work resembles that of the Intergovernmental Panel on Climate Change (IPCC), as it builds on and integrates efforts by a large network of scientists around the world.

Project activities include meetings and workshops with scientists in different fields, and active participation in scientific conferences. Joint studies are also conducted with scientific institutions on how to apply modern analysis methods to improve the efficiency of data analysis and the quality of related products.

ISS09 Conference

The next main event will be the ISS09 Conference at the Hofburg Imperial Palace in Vienna, Austria from 10 to 12 June 2009. The topics to be covered by the Conference are outlined on page 3 and more detailed information is available at the dedicated area for the ISS project at www.ctbto.org.

The Conference will present the findings of the most comprehensive assessment of the CTBT's verification regime ever conducted and will discuss how science has evolved since the Treaty was negotiated. Involvement by the scientific community is of utmost importance to determine the system's capabilities and how it can be further improved within the framework of the Treaty. ■

Biographical note

Dr. Ola Dahlman has been engaged in arms control negotiations for over 30 years and spent his entire professional career at the Swedish Defense Research Institute in Stockholm, Sweden. He chaired the Group of Scientific Experts before and during the CTBT negotiations from 1982 to 1996. He subsequently headed the CTBTO's Working Group on verification issues from 1996 to 2006. Dr. Dahlman is currently leading the International Scientific Studies project. ■



THE GLOBAL ALARM SYSTEM
 1 THE VERIFICATION REGIME STANDS READY
 2 AN EXPLOSION TRIGGERS SHOCKWAVES THAT ARE DETECTED BY SEVERAL STATIONS...
 3 ...WHICH IMMEDIATELY TRANSMIT THE SIGNALS THROUGH SATELLITES...
 4 ...AND SECURE DATA CONNECTIONS ON THE GROUND TO THE IDC IN VIENNA.
 5 FROM THE IDC, RAW DATA AND THEIR ANALYSES ARE DISTRIBUTED TO THE CTBT MEMBER STATES.