



## **Experimental Infrasound Array for Understanding Infrasound Signals and Sources**

**J. Coyne**, N. Brachet, P. Campus, P. Martysevich, J. Grant

CTBTO Preparatory Commission, Vienna International Centre, P.O. Box 1200, 1400 Vienna,  
Austria (John.Coyne@ctbto.org/ +43 1 26030 6266)

The array processing techniques used at the International Data Centre (IDC) for infrasound processing have demonstrated the exceptional capability of International Monitoring System (IMS) network for detecting signals from a wide variety of natural or man-made sources (e.g., microbaroms, ocean surf, mountain associated waves, volcanoes, thunderstorms, meteorites, avalanches, aurora, rockets, aircrafts, mine blasts, accidental explosions, industrial noise). Unlike earthquakes for seismic technology, sources of infrasound signals are rarely energetic enough to be detected on a global scale by the IMS network. The cross correlation technique developed at the IDC is well adapted for the detection of infrasound signals as it offers optimum detection capability even in difficult cases of very weak signals. The counterpart of the method is that each IMS infrasound station produces a large amount of genuine signal detections from diverse origins. It is important for the PTS to understand and categorize these infrasound signals.

The IDC is building a catalog of sources of infrasound signals detected and identified at IMS infrasound arrays, which are stored in the IDC Infrasound Reference Event Database (IRED). However, the contents of the IRED are limited due to the difficulties encountered in collecting metadata information about the sources, as well as the limited number of observations. In some cases a hypothesis can be formed concerning the potential source of a signal, e.g., industrial activity that could generate infrasound signals over local to regional distances. In order test such hypotheses, and to identify and catalog other infrasound signals near an IMS array, the PTS is procuring a portable infrasound IMS-type array that could be temporarily deployed in a region of interest

in collaboration with a local institute.

This effort is seen as an opportunity for the PTS to work closely with National Data Centres and other interested parties to carry out scientific projects that would help to identify and categorize sources of infrasound signals detected at IMS infrasound arrays. This capability could also be used to assess both field techniques (e.g., wind reduction systems) and data processing techniques used at the IDC. The equipment for this project is currently being procured, and will be available for use in 2008. The PTS is looking forward to scientific collaborations with other institutes in order to better understand infrasound signals and their sources.