

## CTBTO Monitoring Test Site at Trafelberg, Austria

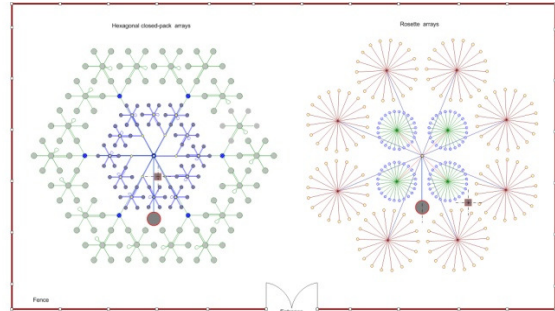
The International Monitoring System (IMS) of the Preparatory Commission of the Comprehensive Nuclear Test-Ban Treaty Organization (CTBTO) has built an infrasound and seismic test facility at the Conrad Observatory in Trafelberg, Austria. The purpose of the installation is to assess the efficiency of different geometries of wind noise reducing systems, to test new engineering solutions, and assess the added value deriving from the co-location of infrasound and seismic sensors.

The rapid growth of the number of IMS infrasound stations of the IMS network created an increasing need for performance assessment of equipment and infrasound array components. In order to address issues related to the sustainability of the IMS infrasound arrays and to develop engineering solutions to improve the performance of the installed stations, an infrasound test site was established at the Conrad Observatory (Fig. 1).



**Figure 1:** General view of the test site.

The site has four co-located pipe array elements, namely, two rosettes and two closed-packed hexagonal arrays, as shown in Figure 2. Each geometry type comes in two dimensions: 18 and 36 meters. Located in each vault are: a recording pier for the MB2005 microbarometers, Guralp CMG-3T broadband seismometers, power and communication systems. Meteorological sensors are also installed in the vicinity of each vault. The equipment was deployed in July 2009 and it is operational ever since.



**Figure 2:** Infrasound Test Wind Noise Reduction Systems and equipment vaults at Conrad test-site.

The design of the test facility allows a thorough analysis of the effectiveness of different types of wind-noise reducing systems installed at the IMS Infrasound stations. The co-location of infrasound and seismic sensors also permits to conduct parallel tests to assess the synergy between the two wave technologies. Furthermore, the test facility will be used for engineering and development studies, such as, testing of new equipment, system integration, assessment of the performance of wind-noise reducing systems, station calibration, etc.

The first experiment conducted in this facility was the response measurement of infrasound elements using external reference microphone triplets. It was conducted in collaboration with Penn State University, USA in May 2010. Results from this experiment were reported at the 2010 Monitoring Research Review in Orlando, FL. Upcoming experiments include the deployment of a portable infrasound array for performance testing and data comparison between different sensors and array designs.

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