



The National Data Centre Preparedness Exercise NPE 2012 – Waveform data analysis results

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The National Data Centre Preparedness Exercises simulate a fictitious violation of the Comprehensive Nuclear-Test-Ban Treaty (CTBT) and are conducted by NDCs (National Data Centres) for NDCs with the aim to increase the awareness and preparedness of their duties. These exercises are regularly performed with different scenarios and key aspects. They help to evaluate the effectiveness of procedures applied at NDCs, as well as the quality, completeness, and usefulness of IDC (International Data Centre) products.

The NPE 2012 has been organized and coordinated by the control team at the German NDC on behalf of the remaining NDCs and with support from the CTBT- Organization. A seismic event from REB (Reviewed Event Bulletin) was selected as an internal source of a fictitious release of iodine and radioxenon. Additionally, xenon releases at two background sources were included. The exercise started with the notification of hypothetical radionuclide concentrations detected at IMS stations (International Monitoring System. The internal release scenario was kept undisclosed for participants during the exercise. Therefore one main task of the exercise was the identification of the seismic source event.

Atmospheric Transport Modeling in backward mode was required to confine the possible source region and find candidate waveform events from REB. The analysis of xenon isotopic ratios gives additional information about the source characteristics and the event timing. Seismological characteristics of the remaining candidate events was investigated in detail and combined with associated infrasound detections to discriminate between natural seismic events and explosions. Spectral behaviors and source characteristics derived from seismic recordings at IMS stations were compared with events from various clusters associated with mining activities. Individual analysis steps are presented and challenges towards possible source identification for the NPE 2012 as well.