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Participation of the NDC Austria at the NDC Preparedness Exercise 2012

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NDC Preparedness Exercises (NPEs) are conducted annually by the National Data Centers (NDCs) of CTBT States Signatories to train the detection of a (hypothetical) nuclear test. During the NDC Preparedness Exercise 2012, a fictitious radionuclide scenario originating from a real seismic event (mining explosion) was calculated by the German NDC and distributed among all NDCs. For the scenario computation, it was assumed that the selected seismic event was the epicentre of an underground nuclear fission explosion. The scenario included detections of the Iodine isotopes I-131 and I-133 (both particulates), and the Radioxenon Isotopes Xe-133, Xe-133M, Xe-131M and Xe-135 (noble gas). By means of atmospheric transport modelling (ATM), concentrations of all these six isotopes which would result from the hypothetical explosion were calculated and interpolated to the IMS station locations. The participating NDCs received information about the concentration of the isotopes at the station locations without knowing the underlying seismic event. The aim of the exercise was to identify this event based on the detection scenario.

The Austrian NDC performed the following analyses:

• Atmospheric backtracking and data fusion to identify seismic candidate events,
• Seismic analysis of candidate events within the possible source region,
• Atmospheric transport modelling (forward mode) from identified candidate events, comparison between “measured” and simulated concentrations based on certain release assumptions.

The main goal of the analysis was to identify the event selected by NDC Germany to calculate the radionuclide scenario, and to exclude other events. In the presentation, the analysis methodology as well as the final results and conclusions will be shown and discussed in detail.