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Scenario design and basic analysis of the National Data Centre Preparedness Exercise 2013

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The Comprehensive Nuclear-Test-Ban Treaty (CTBT) prohibits all kinds of nuclear explosions. For the detection of treaty violations the International Monitoring System (IMS) operates stations observing seismic, hydroacoustic, and infrasound signals as well as radioisotopes in the atmosphere. While the IMS data is collected, processed and technically analyzed in the International Data Center (IDC) of the CTBT-Organization, National Data Centers (NDC) provide interpretation and advice to their government concerning suspicious detections occurring in IMS data.
NDC Preparedness Exercises (NPE) are regularly performed dealing with fictitious treaty violations to practice the combined analysis of CTBT verification technologies and for the mutual exchange of information between NDC and also with the IDC. The NPE2010 and NPE2012 trigger scenarios were based on selected seismic events from the Reviewed Event Bulletin (REB) serving as starting point for fictitious Radionuclide dispersion. The main task was the identification of the original REB event and the discrimination between earthquakes and explosions as source. The scenario design of NPE2013 differs from those of previous NPEs. The waveform event selection is not constrained to events in the REB. The exercise trigger is a combination of a tempo-spatial indication pointing to a certain waveform event and simulated radionuclide concentrations generated by forward Atmospheric Transport Modelling based on a fictitious release. For the waveform event the date (4 Sept. 2013) is given and the region is communicated in a map showing the fictitious state of “Frisia” at the Coast of the North Sea in Central Europe. The synthetic radionuclide detections start in Vienna (8 Sept, I-131) and Schauinsland (11 Sept, Xe-133) with rather low activity concentrations and are most prominent in Stockholm and Spitsbergen mid of September 2013. Smaller concentrations in Asia follow later on.
The potential connection between the waveform and radionuclide evidence remains unclear. The verification task is to identify the waveform event and to investigate potential sources of the radionuclide findings. Finally the potential conjunction between the sources and the CTBT-relevance of the whole picture has to be evaluated. The overall question is whether requesting an On-Site-Inspection in “Frisia” would be justified. The poster presents the NPE2013 scenario and gives a basic analysis of the initial situation concerning both waveform detections and atmospheric dispersion conditions in Central Europe in early September 2013. The full NPE2013 scenario will be presented at the NDC Workshop mid of May 2014.