ID: Type: **Poster**

A Seismo-Acoustic Analysis of the 2017 North Korean Nuclear Test

Underground nuclear tests give rise to seismic and infrasound signals that can be detected on International Monitoring System (IMS) stations. The infrasonic signals are due to seismo-acoustic coupling. The radiation of infrasound is dependent on source depth. Recent studies have demonstrated the added value of seismo-acoustic analyses, for example, to improve depth-yield estimates of (nuclear) explosions. In this study, we present a seismo-acoustic analysis of the 2017 North Korean Nuclear Test that has been detected on IMS microbarometer array I45RU. We analyze the seismo-acoustic coupling by making use of array processing and back-projection techniques. The back-projections show that infrasound radiation is not confined to the epicentral region. More distant regions are found to be consistent with locations of topography, sedimentary basins, and underwater evanescent sources. The back-projections can be used to estimate the average infrasonic propagation speed through the atmosphere. We discuss these findings in the context of infrasound propagation conditions during the sixth nuclear test. It is suggested that propagation from the test site to I45RU may have occurred along unexpected paths instead of typical stratospheric propagation. We present several scenarios that could be considered in the interpretation of the observations.

Primary author: ASSINK, Jelle D. (KNMI - Royal Netherlands Meteorological Institute)

Presenter: ASSINK, Jelle D. (KNMI - Royal Netherlands Meteorological Institute)

Track Classification: Theme 2. Events and Nuclear Test Sites