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Relative Energy and Aperture Estimation of the Five Explosions in North Korea

According to the calculation，The latest nuclear explosion occurred in North Korea had the largest energy at the frequency of 0.1-3 Hz, and in the frequency higher than 3 Hz, the latest event had the same energy with the ones in Jan. 2016，the one in 2013 and even the one in 2009. At 2 Hz, the ratio of the event occurred on Sep. in 2016 to other four events are 40.1：4.7：2.0：1.8 respectively, which have little difference with the results of Wen Lianxing，2016， group, who gave the 17.8kt：11.3kt： 12.2kt ：7kt：0.48kt for the five events, and the ratios are 37.1 ： 2.5：1.5：1.6 respectively. According to the calculation, the maximum coefficients of E1609 and E06，E09，E13，E16 is 0.88， 0.98 0.94，0.98 in vertical direction. According to Fuqing array，Zhangzhou array analysis in China and the research results of Ingate(1985) and Rindal(1982), we concluded that the aperture of the five events is no large than 3km, the distance of the latest two events is no longer than 1km.

Primary author: ZHENG, Zhong (Institute of Geophysics, China Seismology Bureau)

Presenter: ZHENG, Zhong (Institute of Geophysics, China Seismology Bureau)

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