



## **North Korea nuclear test analysis results using KMA seismic and infrasound networks**

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Democratic People's Republic of Korea(DPRK) carried out 6th nuclear test on 3 Sep. 2017 at 03:30 UTC. Seismic and infrasound network operated by Korea Meteorological Administration(KMA) successfully detected signals took place in the DPRK's test site, Punggye-ri.

First, we checked that Pg/Lg spectral amplitude ratio greater than 1 in the frequency range from 1.0 to 10.0 Hz is useful to discriminate between DPRK test signals and natural earthquakes.

KMA's infrasound stations of Cheorwon(CW) and Yanggu(YG) successfully monitored the azimuth direction of the arrival of the infrasound signals generated from DPRK underground nuclear explosions, including the recent test on September 03, 2017. The azimuthal direction of 210 (CW) and 130 (YG) point out Punggye-ri test site.

Complete waveforms at stations MDJ, CHC2, YNCB in long period(0.05 to 0.1 HZ) are jointly inverted with local P-wave polarities to generate moment tensor inversion result of the explosive moment  $1.20e+24$  dyne cm( $M_w$  5.31) and 65% of ISO. The moment magnitude of 5th, 4th and 3rd are 4.61, 4.69 and 4.46 respectively. Source type moment tensor inversion result of DPRK nuclear tests show that the event is significantly away from the deviatoric line of the Hudson et al. (1989) source-type diagram and identifies as having a significant explosive component.

Analysis results using seismic and infrasound network verify that the DPRK's explosion tests classified as nuclear test.