

## **Evaluation of the 3rd NK Nuclear Test: Comparison with the 1st and 2nd Tests**

About noon of Feb. 12th 2013(KST), the seismic signals from the North Korea's third underground nuclear test were detected by seismic stations in South Korea, Northeast China and Russia which are distributed uniformly along the boundaries between North Korea and adjacent countries. The relative location to the first event was calculated. The epicenter of the third event was about 400 meter south from the second event. A body wave magnitude (mb) was estimated as 4.9 and showed directional variations which were observed in the previous two events. The regional seismic discriminant and moment tensor inversion categorized the event into an explosion group. The infrasound signals from the test site detected at infrasound stations being operated by KIGAM in southern Korean Peninsula and the two IMS stations provide another evidence that the third event is an explosion. By analyzing empirical relationship between the calculated seismic magnitude and spectral ratios of P-waves, relative yield of 2013 is estimated as about 2 times larger than the second event and 10 times larger than the first events.

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