

# ***Interactive comment on “A Multi-Technology Analysis of the 2017 North Korean Nuclear Test” by Peter Gaebler et al.***

## **Anonymous Referee #2**

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The paper proposes a multi-phenomena analysis of the September 2017 announced nuclear event in North Korea. It provides an original approach to the event by analyzing and combining multiple technology. Single technology analysis for such events is traditional and the author work is an intriguing attempt at fusing analysis results of multiple techniques and interpret them jointly. After introducing the event, the results and techniques used for monitoring nuclear explosions, the manuscript splits in 5 sub-sections presenting observations and modeling results for each technology separately. Seismic, infrasound, remote sensing with satellites and radionuclide technologies are covered.

The seismological methods provide a refined epicenter location, an depth estimate, moment tensor solution and a yield estimate taking into account topography and site

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composition. Infrasound signals have been detected and analyzed to confirm association with the seismic event with a focus on ground coupling. DinSAR method allowed to estimate surface displacement in the area of interest. Atmospheric transport modeling was performed to explain the radionuclide readings registered on regional stations. All methods are introduced in their own context and there is a sense of convergence from the different method.

However the different parts appear to be relatively disjoint. Individually the results by technology are likely worth publishing, however this is not the objective of the paper, which is to propose a multi-technology analysis. The document as such appear to be rather a catalog of result that a multi-technology analysis, which could be achieved through establishing the objective of such an approach and adding discussion and transition between methods and technologies. Noteworthy, the link between the different seismological methods should be emphasized and discussed, and in particular the differences in estimations. The fusion of results between technologies also needs to be further introduced and discussed. Questions that the manuscript should answer are: what are the author trying to achieve by having a multi-technology approach? and in the end, did they achieve it and if not, what was the reason? (technology/resolution limitations, insufficient knowledge at the interface between technologies...?)

I believe the manuscript to be of interest for publication and it should be revised and improved beforehand.

Note: the attach manuscript contains a few edits for the author consideration.

Please also note the supplement to this comment:

<https://www.solid-earth-discuss.net/se-2018-102/se-2018-102-RC2-supplement.pdf>

Interactive comment on Solid Earth Discuss., <https://doi.org/10.5194/se-2018-102>, 2018.

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