

Space Borne Optical and Radar Data to characterize North Korean Nuclear Test 2017

To visualize and characterize the surface imprint of the 2017 test, radar data from the ALOS-2 satellite and multispectral optical data from the Pleiades satellite are investigated. Data from the ALOS-2 satellite in the L band are analyzed by SAR Interferometry to investigate surface deformations correlated with the 2017 test and its aftershocks. The method of change detection analysis based on vegetation changes is applied. Space borne InSAR nowadays allows for the detection of surface displacements with a precision on the order of a few millimeters. Repeat pass interferometry is based on the registered interferometric phase per ground cell (pixel) and is related to the distance differences between the scatterer and the synthetic aperture radar (SAR) sensor between two acquisitions separated in time. For the analysis of the surface displacement due to the 2017 test, data from 29 August and from 12 September 2017 are used. InSAR analysis based on the ALOS-2 satellite data reveal strong surface deformations in the epicenter region, the resulting map of resolvable displacements clearly shows an area of subsidence of up to 10 cm 3 km north of the main support area and clear uplift of up to 10 cm west of the Mt. Mantap.

Primary author: FREI, Michaela (BGR)

Presenter: FREI, Michaela (BGR)

Track Classification: Theme 2. Events and Nuclear Test Sites