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Volcanic deformation in Tokachi-dake volcano, Hokkaido, Japan, detected by X-band and L-band DInSAR observations

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Tokachi-dake volcano is located in central Hokkaido, Japan, and is the most active volcano in Tokachi-dake volcano group. Middle sized eruptions occurred in 1926, 1962, and 1988-1989, and several small phreatic eruptions also occurred in the meanwhile. After the latest eruption in 1988-1989, many volcanic tremors and active seismicity were revealed. Fumarolic activities from Taisho crater and 62-2 crater have been observed. Continuous GNSS sites were located adjacent to the top of the volcano. They have revealed that local inflation occurred in the area and it continued up to 2016. Remarkable inflation was revealed by the GNSS and DInSAR observations in May-July, 2015. X-band SAR/TanDEM-X and L-band SAR/ALOS-2 observed the Tokachi-dake volcano in same period, and detected the local transient inflation of top of Tokachi-dake volcano. In this study, we tried to acquire two dimensional displacements, using DInSAR results observed from both west and east side of the area. Then we tried to infer deformation source. First, we use simple Mogi source [Mogi, 1958] as the deformation source, but it is necessary to take into consideration an influence of the terrain . Then we try to acquire better fit between observed and modeled data using boundary element method [Kawaguchi et al., 2016] or finite element method [Okuyama and Takahashi, 2015].