

Opening crack associated with the 2015 eruption of the Hakone volcano estimated from InSAR

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Seismic activities on the Hakone Volcano, which located western part of Kanagawa Prefecture, Japan, were activated from the end of April, 2015. Then, small phreatic eruptions occurred at the Owakudani from 29th June. From the InSAR analysis by using ALOS-2/PALSAR-2 data, we detected a crustal deformation which caused by an opening crack formed during the eruption. Based on the inversion modeling of InSAR data, we defined the geometric and kinematic characteristics of the opening crack.

Estimated crack is trending NW-SE direction and dipping 82.2°NE, with 1.3 km in length and 0.3 km in width. Opening displacement was estimated to be 14.5 cm in a rectangular model. The opening distribution was estimated through the linear inversion, under the condition that the position and orientation of crack were fixed. The result showed that two peaks of opening were in the central shallow part and southern part. Volume changes of the crack were estimated $5.6 \times 10^4 \text{ m}^3$ in the rectangular model and $6.6 \times 10^4 \text{ m}^3$ in the linear model. It is considered that the intrusion of hot water or steam to the crack excited the swelling and triggered the eruption at Owakudani.

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