

Preparatory process for the 2014 eruption in Ontake Volcano estimated from precise leveling (2006-2014)

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A preparatory process for the 2014 eruption in Ontake Volcano was estimated from vertical deformations detected by precise leveling. We installed leveling routes in the east part of Ontake volcano and conducted the precise leveling survey since 1999 (Kimata et al., 2004).

Here we focused on the vertical deformations during 2006-2014 to discuss the preparatory process for the 2014 eruption. Before 2006, slight uplift was detected just above the region of the most active earthquake cluster. The uplift, however, was detected around summit area after 2006. Despite the occurrence of eruption in 2007, slight uplift was continued to the 2009. The total value of the uplift during 2006 -2009 was about 1cm. The leveling survey was conducted with small part of the leveling routes in 2013. Although the result from the leveling survey with small distance is strongly affected by reference point, the result suggests that the slight uplift might be continued to the 2013. In the survey after 2014 eruption, the subsidence with about 1 cm was detected.

Based on the leveling results, possible preparatory process for the 2014 eruption in Ontake Volcano was as follows. The magma intruded to the shallow part of Ontake volcano in 2006 and small eruption occurred in 2007. The magma supply, however, was continued slightly after 2007 eruption and then 2014 eruption occurred. After 2014 eruption, magma with shallow part was deflated.

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