

## Precise Leveling Survey in Aso Caldera

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In Aso volcano, leveling survey has been conducted since 1937 by Kyoto University. As a result of these surveys, subsidence centering on a point about 2km west-southwest of Naka-dake crater is observed. And it is revealed that this subsidence was caused by contraction source located at about 3km west of Naka-dake crater (which is called as Kusasenri) with a depth of 4 to 6 km (Sudo et al. 2006). A seismic tomography showed a low velocity zone of a 2 to 3 km diameter existed 6km below Kusasenri (Sudo and Kong, 2001), almost in accordance with the position of contraction source. Therefore, this low velocity zone is considered to correspond to a magma chamber.

On the other hand, GSI (2004) reported that the dilatation centering on Aso Caldera had occurred in 2003 and that the deformation source was located at a deeper portion than the above mentioned chamber.

In this study, we try to locate deformation sources that account for the crustal deformation since 2004 by means of a precise leveling survey in Aso caldera.

We conducted a first-order leveling survey in Aso caldera in September and October 2008. From the obtained survey data, we calculated the relative height of each bench mark referred to a bench mark (AVL-1) which is located at the northern foot of central cones of Aso volcano. The calculated relative heights were compared with those of the 1998, 2003 and 2004 surveys, resulting in the relative vertical displacement at each benchmark. The resultant displacements show ground subsidence with amount of 1cm in the Kusasenri area about 2km west of the Nakadake active crater and 1cm at the northern foot of the central cones. It is possible that deflation at both of the sources account for this subsidence.