

## 阿蘇火山の地盤変動とマグマ溜まり

—長期間の変動と圧力源の位置—

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Ground Deformation and Magma Reservoir at Aso Volcano:  
Location of Deflation Source Derived from Long-term Geodetic SurveysYasuaki SUDO\*, Tomoki TSUTSUI\*\*, Makoto NAKABOH\*\*\*,  
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So far the ground deformation associated with a magma supply system of Aso Volcano had not been discussed because any clear signals in ground deformations and volcanic earthquake activity had been hardly observed near the Nakadake active crater during its activity enhancement cycles. In this article, however, the deflation source and magma supply system is investigated by the long-term geodetic surveys. The secular subsidence is observed in the Kusasenri area about 3 km west of the Nakadake active crater from the 1951's levelling survey in compiled levelling surveys along the Bouchuu-line since 1937. While the ground deformation near the active crater has been obscure. The source of this deflation near the Kusasenri area is estimated on the basis of the spherical pressure source model through the non-linear least square method with using recent survey data which include the Bouchuu-line and an extended survey route. The deflation source is located beneath the Kusasenri area at about 5 km depth. However, recent volume changes at the spherical deflation source are smaller than before 1959. The location of the deflation source coincides with the low P- and S-wave velocity body in the 3D seismic velocity structure. This fact supports a hypothesis that the low seismic wave velocity body represents a magma reservoir. Therefore this magma reservoir beneath the Kusasenri area must be connected to the Nakadake active crater. We inferred a rigid conduit in the magma supply system from the obscure ground deformation in the vicinity of the Nakadake crater.

**Key words:** Aso Volcano, ground deformation, magma reservoir, 3-D seismic wave velocity structure, magma supply system

## 1. はじめに

多くの活動的な火山において、火山活動の推移ともなっていて、特に噴火活動へ移行する時、活動火口のごく近くで火山性地震の発生頻度の増大や地盤に顕著な変動が

観測されている (例えば, Malone *et al.*, 1981; McNutt, 1996 など)。そしてまた、噴火中およびその後においても、火山活動にともなう地盤変動が観測され、その結果からマグマ供給機構との関係が明らかにされつつある

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