

## Relations of magma ascent in an open conduit to volcano deformation

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Recent geodetic measurements show that accelerated inflations around a crater of volcano repeatedly precede small explosions of Strombolian or Vulcanian type eruptions. To explain such temporal changes in the observed volcano deformations, we investigate roles of magma ascent in an open conduit. Gas bubble growth or gas bubble rise in the conduit introduce rapid increase of total magma volume in the conduit so that the magma head rise up with time. We evaluate such effects by using a simple gas bubble growth model and gas bubble rise in an open conduit to obtain their relations to the volcano deformation. The results show that normal stress or shear stress acting on the conduit wall increase with time according to the growth or rise of gas bubbles. This suggests that gas bubble behavior is one of the most plausible candidates of the origins of volcano deformation preceding volcanic explosion.