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Disturbance on magma system of Mount Fuji by the induced earthquake Mjma6.4 at eastern Shizuoka prefecture

Eisuke Fujita^{1*}, Tomofumi Kozono¹, Hideki Ueda¹, Taku Ozawa¹, Shoichi Yoshioka², Norio TODA³, Aiko KIKUCHI³, Yoshiaki Ida³

¹NIED, ²Kobe University, ³Advance Soft Corporation

The Mjma6.4 earthquake at eastern Shizuoka prefecture on March 15 is considered to be the induced earthquake by the 2011 off the Pacific coast of Tohoku earthquake. This earthquake occurred beneath the south flank of Mount Fuji and may affect on the magma plumbing system. We applied numerical simulation to estimate the stress change quantitatively and studied the possibility the induced eruption of Mount Fuji. By the analysis of crustal deformation, GPS and tiltmeter data around Mount Fuji, of Mjma6.4 earthquake, the seismic fault is inferred to be almost strike slip of 86 centimeters, and strike, dip and rake are 24, 80 and 20 degrees, with the size of 6 kilometers x 6 kilometers at 7 kilometers depth (top position). The location of magma reservoir of Mount Fuji is not clear but estimated about 15 ? 25 kilometers depth by seismic tomography (Nakamichi et al, 2007) and hypocenter distribution of deep long period events. In this paper, we calculated stress field change caused by Mjma6.4 earthquake and evaluated the disturbance loaded on the magma reservoir. Our result clearly suggests that upper western area is compressed and upper eastern part is depressed. The possibility to squeeze magma and to cause an eruption depends on not only stress perturbation but also on the intrinsic potential of magma to erupt, e.g., gas component, heat, etc.

Keywords: The 2011 off the Pacific coast of Tohoku earthquake, Mount Fuji, Stress change, magma reservoir, FEM, infinite boundary