

Seismic swarm and emission of high temperature gas at Tarumae volcano induced by the 2003 Tokachi-oki earthquake

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It is commonly believed that volcanic fluids have a great bearing on the excitation of low-frequency (LF) volcanic earthquakes. All physical source models for LF earthquakes previously proposed need some kind of movable volcanic fluids. However, there has been no observed evidence suggesting participation of volcanic fluid in earthquake triggering. After the 2003 Tokachi-oki earthquake (Mw8.3), at Tarumae volcano, Japan, seismic swarm below the summit dome and succeeding unusual steaming activity, that was found 8 days later of the swarm, were observed. Simple steady flow model of superheated steam through porous pipe exhibits that upwelling steam can explain fumarole temperature up to 500 degrees C as well as time delay of surface activity. Additionally this result means that high ground temperature at fumaroles doesn't necessarily require a shallow magma reservoir. The example shown in this presentation is one of the most desired data and results by many volcano researchers.