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# Resistivity structure and 3He/4He ratios around the focal zone of the 2011 Mw 5.9 earthquake beneath Mt. Fuji, Japan

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We present the results of a joint 3-D resistivity and isotopic analysis of the groundwater system surrounding Mt. Fuji, Japan, where increased seismicity was observed following the 2011 TohokuOki megathrust earthquake. The electrically conductive zone and high concentrations of magmatic helium correspond to this zone of triggered seismicity. In contrast, 2H (D) and 18O isotope ratios, and Li/Cl ratios do not support the presence of magmatic water. These results suggest that the earthquakes were triggered within a fractured zone where only magmatic gas preferentially travels upward. Although multiple mechanisms may jointly contribute to this remote earthquake generation, we hypothesize that a small fraction of gas bubbles, which are originally secured within the fracture zone by capillary trapping, play a key role for earthquake triggering.