

SVC063-P09

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Source model of the earthquake swarm east off Izu Peninsula in December, 2009 estimated from geodetic data

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Geodetic measurements including GPS, EDM, leveling captured episodic crustal deformation related with the earthquake swarm east off Izu peninsula began on December 17, 2009. We used the result of baseline analysis for GPS data acquired by the Geographical Survey Institutes and the Japan Metrological Agency in order to estimate the source model for the earthquake swarm. A preliminary model consists of a tensile fault and a shear strike-slip fault. The upper edge of the tensile fault is 2.4 km deep with a volumetric increase of $3.6 \times 10^6 \text{ m}^3$.

We also estimated the fault models for the swarm activities in January and May, 1995, and April, 2006 using geodetic data. The inversion result suggests that the volumes of the dikes for these activities are $5 \times 10^6 \text{ m}^3$, $8.2 \times 10^6 \text{ m}^3$, and $1.4 \times 10^7 \text{ m}^3$, respectively. Dikes estimated in this study and those for the past activities in 1989 and 1990's align from west-northwest to east-southeast without overlapping. The dike for the 2009 swarm locates near the western edge of the alignments.

Keywords: Source model, crustal deformation, East off Izu Peninsula, Earthquake swarm, dike