Mechanism of explosive eruption revealed by source mechanism analysis of explosion earthquake at Sakurajima volcano

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Source process of explosion earthquake accompanied by explosive eruption at an andesitic volcano Sakurajima was investigated in order to make clear mechanics of explosive eruption from seismic observation and data of air-shock and ground deformation. The explosion earthquakes are initiated by an isotropic expansion and are followed by cylindrical contraction originating at depths of 2 km beneath the crater. Shallow isotropic expansion and horizontal contraction occur 0.9-1.1 s after the onset of explosion earthquake at depth of 0.5 km. It is considered that pressure wave induced by the deep isotropic expansion propagate through the conduit up to crater and act as trigger for outbreak of gas pocket corresponding to the shallow isotropic expansion source.