Analysis of Volcanic earthquake swarm in Gede Volcano, Indonesia base on seismicity and focal mechanism

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Gede volcano is an active strato-volcano in Indonesia. It was very active in 1747-1748 and produced a devastating eruption and lava flow. In 1890, a pyroclastic flow destroyed a wide area near the volcano. The last eruption was occurred in 1957, when the height of plume reached 3000 m above the crater. Since the installation of the first seismometer at Gede, there have been swarms of earthquakes that occurred every 2-4 years with almost the same amount of total energy. The last two swarms were detected in November-December 2010 and February-March 2012. The volcano monitoring system has been improved by adding five seismic stations and two tiltmeter stations to locate volcanic earthquakes and deformation source. The hypocenter determination in 2011 showed that the volcano tectonic earthquakes were located under Gede Volcano, and also North- and South of the volcano. The earthquakes occurred along a SW-NE trending strike-slip fault which may be connecting the Cimandiri and Lembang faults. Focal mechanisms and tilt vectors in 2011 also suggested strike slip movement. However, when a VT earthquakes swarm occurred in February - March 2012, hypocenters were elongated E-W beneath the Gede crater. Tiltmeter data showed inflation shortly prior to the increasing seismicity, and focal mechanisms indicated normal faulting. Apparently, tectonic movement of the fault was interrupted by magma intrusion beneath Gede in February-March 2012.