

パパンダヤン火山のモニタリング地震の震源過程

Source process of quasi-monotonic events at Papandayan volcano

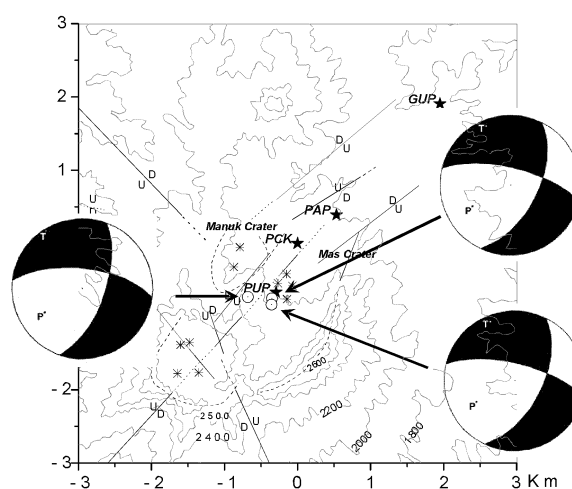
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Papandayan volcano in West Java, Indonesia has repeated phreatic eruptions. Associated with an increase in seismicity of low-frequency (LF) earthquakes in June-July 1998, monochromatic events with slowly decaying quasi-sinusoidal coda part were recorded at 7 seismic stations. Spectra of monochromatic events have sharp dominant peak in frequency range of 1.4 – 1.8 Hz, while spectra of LF events are broader (2-5 Hz) than monochromatic. Epicenters of monochromatic and LF events are located in “Mas crater”, which has a lot of fumarole. Focal depth of monochromatic events is 1.5 to 2.0 km, while LF events are deeper, 2.5-4.0 km.

Moment acceleration tensor was obtained by inversion of amplitude distribution of P-wave first motion at 7 stations and the moment tensor was decomposed into isotropic, double-couple and CLVD parts. Double-couple parts are dominant in both monochromatic (70-77%) and LF events (36-73%). Fault plane solution shows that monochromatic and LF events are normal fault types with strike of nodal planes are directed NE-SW. The strikes coincide with the directions of geological faults around Mas crater. Isotropic and CLVD parts are not negligible in LF events. CLVD and isotropic parts attain 5-44% and 10-31%, respectively.

Both monochromatic and LF events occur beneath Mas crater and activation of fumarolic gas emission was observed when seismicity of these events increased. They may be related with hydrothermal system. LF events could be generated by fracturing of normal fault accompanying movement of the fluid. Similarities of LF events and initial parts of monochromatic events in spectra and source mechanisms suggest that LF events are triggers of quasi-sinusoidal coda parts of monochromatic events. Shear fracture excite resonance of adjacent crack filled

with fluid.



Fault plane solutions of three monochromatic events