Fluctuation of submarine fountain height during eruption of the Miocene Sawasaki pyroclastic rocks.

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Fluctuation of submarine fountain height is suggested from a description of internal organization, structure, and thickness of basaltic volcaniclastic deposits (the Sawasaki pyroclastic rocks) from the Middle Miocene Ogi Basalts, Sado Island, Japan.

The Sawasaki Pyroclastic Rocks is composed of stratified sequence of fire fountain eruption deposits of olivine basalt (Fujibayashi and Sakai, 2003). It comprises four distinct lithofacies; scoria agglomerate (Sagg), scoria tuff breccia (Stfb), scoria lapilli tuff (Sltf), and scoria tuff (Stf). Both the Sagg and Stfb are composed of scoria clasts and fluidal spatter bombs, and are formed from syn-eruptive grain flows and cohesionless, clast-supported debris flows. It is noted that the Sagg beds distributed near the vent are abundant in spatter bombs, but thinner, and the components (spatter and scori clasts) are smaller, compared to the Stfb. They often show internally inverse or inverse to normal grading, which should reflect fluctuation of intensity during one eruption. The Stfb beds are poorer in spatter bombs, and are inversely graded near the vent or massive away from the vent. The massive Stfb beds are thick, and contain larger spatter clasts than the proximal Stfb and Sagg. From these observations, it is concluded that the overall coarse, massive Stfb beds were originated from higher fountain columns with high magma discharge and formed rootless flows. The eruption style may be approximated to that of 1983-1986 Pu'u 'O'o eruption.