

Evolution of magmatic plumbing system and tectonics of Fuji and adjacent volcanoes since 0.4Ma.

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The evolution of magmatic plumbing system of Fuji and adjacent volcanoes, the Ashitaka, Hakone and Izu-Tobu, since 0.4Ma, has been controlled by the collisional tectonics in the northern tip of the Philippine Sea plate. The evolution of magmatic plumbing system of Fuji and adjacent volcanoes comprises the Stage-1 to Stage-3. In the Stage-1 (0.40 to 0.27Ma), the Ashitaka, Pre-Komitake, Hakone and Amagi basaltic to andesitic stratovolcanoes were active. The Philippine Sea plate, where the Hakone and Amagi andesitic stratovolcanoes are located, subducted along the Suruga trough and its northern extension beneath the Tanzawa block on which the Ashitaka and Pre-Komitake basaltic stratovolcanoes are situated. In the Stage-2 (0.27 to 0.13Ma), the Ashitaka, Pre-Komitake and Hakone volcanoes continued their volcanic activities. The Hakone volcano in this stage was characterized by the voluminous felsic pyroclastic eruptions, related calderas, and andesitic to felsic independent monogenetic volcano group; the NNW-SSE trending graben was probably formed in the Hakone volcano under the ENE-WSW extensional tectonics. The tensional strain caused by the westward subduction of Philippine Sea plate was probably released by the extension of the graben of Hakone, because the subduction of the Philippine Sea plate along the Kannawa fault was stopped and it completely stacked to the Tanzawa block. In the Stage-3 (0.13Ma to present), the volcanism of Komitake, Fuji, central cone of Hakone, and Izu-Tobu monogenetic volcano group were active. The amalgamation of Philippine Sea plate with Tanzawa block along the Kannawa fault was resulted in the formation of the Tanna-Hirayama left lateral strike-slip fault. The central cone of Hakone was developed in the pull-apart portion of the Tanna-Hirayama strike slip fault. The northward movement of the eastern block of the Tanna-Hirayama fault caused the extensional tectonics in the Amagi volcano, bringing the volcanic activity of Izu-Tobu monogenetic volcano group. The strain caused by the subduction of Philippine Sea plate along the Suruga trough gave rise to the opening of the deep fracture in the Philippine Sea slab beneath the Fuji volcano, which is probably the cause of the extraordinary voluminous eruption of basaltic magma of Fuji volcano.

Keywords: Fuji volcano, magmatic plumbing system, tectonics