

Geology and eruptive history of the Asama-Maekake volcano, central Japan, as a clue to the long-term prediction of volcanic hazards.

Masaki TAKAHASHI, Maya YASUI, Hiroyuki TAKEMOTO, Tatsuo KANAMARU

College of Humanities and Sciences, Nihon University, Japan

E-mail: takama@chs.nihon-u.ac.jp

The Asama-Maekake volcano is the youngest active volcano in the Eboshi-Asama volcano group, aligning in EW direction for a distance of about 23km. The construction of the Maekake volcano began in 13cal.ka (11ka) just after cessation of the activity of the Hotokeiwa volcano. The eruptive history of the Maekake volcano consists of the two contrasting stages: active and dormant. The active stage comprises both Plinian (including sub-Plinian) and Vulcanian (including Stronbolian) eruptions; the former is large-scale and the latter is intermediate to small-scale. The first dormant stage with a time span from 13 to 9.2 cal.ka continued about 3,800 years, accompanying several large Vulcanian eruptions. The first active stage with duration of about 600 years comprises the two Plinian eruption: Fujioka pumice fall deposit in 9.2cal.ka (ca.0.19km³DRE) and Kumakawa pumice fall deposit in 8.6cal.ka (ca.0.07km³). The second dormant stage commenced in 8.6cal.ka and continued to 6.3cal.ka with duration of about 2,300 years, during which the two large Vulcanian eruptions were occurred. The second active stage with duration of about 1,100 years consists of four Plinian eruptions, which gave rise to the Kuni pumice fall deposit in 6.3cal.ka (ca.0.29km³), the Miyota pumice fall deposit in 6.1cal.ka (ca.0.13km³), the Sengataki pumice fall deposit in 5.7cal.ka (ca.0.04km³) and the D pumice fall deposit in 5.2cal.ka (ca.0.13km³). The third dormant stage with a time span from 5.2cal.ka to fourth century continued about 3,600 years, during which three ash fall deposits were produced by large Vulcanian eruptions. The third active stage with duration of at least about 1,650 years includes the historical eruptions; they are the Plinian eruptions in fourth century (ca.0.54km³), 1108A.D. (ca.0.95km³), 1128A.D. (As-B') (ca.0.02km³) and 1783A.D. (ca.0.57km³). The eruptive volume of the large-scale eruption in the third active stage is larger than those of the previous stages. The periods in the active stage between the Plinian eruptions further consist of the two sub-stage: continuously eruptive and relatively quiescent stages. Vulcanian eruptions frequently repeated in the continuously eruptive stage. The Maekake volcano is not a typical stratovolcano composed of lavas and pyroclastic rocks but a densely welded pyroclastic cone. The Plinian eruption is not a typical one cycle eruption in which the pyroclastic fall, pyroclastic flow and lava flow ejected in this order, but the eruptions of pyroclastic fall, pyroclastic flow and clastogenic lava were overlapped. The volcanic cone of the Maekake volcano has grown through every Plinian eruption, especially the historical large-scale eruptions contributed to the construction of the essential portion of present volcanic edifice. The Vulcanian eruptions do not play an important role for the formation of volcanic cone.