

Eruptive history of Asama-Maekake Volcano

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The Asama-Maekake volcano is the youngest active volcano in the Eboshi-Asama volcanic row, aligning in EW direction for a distance of about 23km. The construction of Asama-Maekake volcano began in 12cal.ka just after the cessation of activity of Hotokeiwa volcano. The eruptive history of Asama-Maekake volcano consists of two contrasting stages: active and dormant. The active stage comprises both Plinian (including Stromborian) eruptions; the former is large scale and the latter is intermediate to small scale. The first dormant stage with a time span from 12 to 9.2cal.ka continued about 2,800 years, accompanying several large Vulcanian eruptions. The first active stage with duration of about 600 years comprises two Plinian eruptions: the Fujioka pumice fall deposit (As-Fo) in 9.2cal.ka and Kumakawa pumice fall deposit (As-Km) in 8.6cal.ka and continued to 6.3cal.ka with duration of about 2,300 years, during which two large Vulcanian eruptions were occurred. The second active stage with duration of about 1,400 years consists of four Plinian eruptions, which gave rise to the Kuni pumice fall deposit (As-Kn) in 6.3cal.ka, Miyota pumice fall deposit (As-My) in 6.0cal.ka, Sengataki pumice fall deposit (As-Se) in 5.6cal.ka, and D pumice fall deposit (As-D) in 4.9cal.ka. The third dormant stage with a time span from 4.9cal.ka to fourth century continued about 3,300 years, during which three ash fall deposits were produced by large Vulcanian eruptions. The third active stage with duration of at least about 1650 years comprises historical eruptions; they are the Plinian eruptions in fourth century (As-C), 1108AD (As-B), 1128AD (As-B'), and 1783AD (As-A). The estimated eruptive DRE volume of each large scale eruption is as follows; the eruption in 9.2cal.ka is ca.0.19km³, in 8.6cal.ka is ca.0.07km³, in 6.3cal.ka is ca.0.29km³, in 6.0cal.ka is ca.0.13km³, in 5.6cal.ka is ca.0.04km³, in 4.9cal.ka is ca.0.13km³, in the fourth century is ca.0.54km³, in 1108AD is ca.0.95km³, in 1128AD is ca.0.02km³, in 1783AD is ca.0.57km³. The eruptive volume of large scale eruption in the third active stage is larger than those of previous stages. The periods in the active stage between the Plinian eruptions further consist of two sub-stages: continuously eruptive and relatively quiescent. Vulcanian eruptions frequently repeated in the continuously eruptive stage. The volcanic cone of Asama-Maeake volcano has grown through every Plinian eruption, especially historical large scale eruptions contributed to the construction of essential portion of present volcanic edifice. The Vulcanian eruptions did not play an essential role for the formation of volcanic cone.