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$^{40}\text{Ar}/^{39}\text{Ar}$ AGES OF THE INITIAL ERUPTIONS AT THE SUTTER BUTTES VOLCANO, CALIFORNIA

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The Sutter Buttes are a Pleistocene volcano that lies in the southern Sacramento Valley 80 km north of Sacramento. The volcano is composed of a central core of volcanic domes surrounded by a large fragmental apron. Most of the dome complex is andesite while rhyolite domes form a discontinuous peripheral ring around the andesites. This clear spatial distribution suggests that the extrusion of rhyolite was controlled by a circular fracture. Field mapping of the domes has shown that the rhyolites extruded prior to the andesites.

Williams and Curtis (1977) report that eruptions at the Sutter Buttes spanned the time period of 2.4 to 1.4 million years ago. New $^{40}\text{Ar}/^{39}\text{Ar}$ dates on single crystals of sanidine extracted from several of the rhyolite domes as well as the basal deposits of the fragmental apron at the Sutter Buttes yield a narrow window of dates from 1.583 to 1.553 Ma, each with standard errors of 0.004 to 0.008 Ma.

These new dates are approximately 0.8 Ma younger than the previously reported K-Ar dates from this same sites and record the earliest eruptions at the Sutter Buttes volcano. This initial silicic volcanism took place in a 17,000 to 43,000 year period followed by eruptions of andesite domes. The upper age limit of andesite volcanism has not yet been determined.

$^{40}\text{Ar}/^{39}\text{Ar}$ step heating analyses yield plateau ages from coexisting biotite that are significantly older than the sanidine. An inverse correlation between the age and the percentage of radiogenic argon indicates that the older ages may be the result of potassium loss from the biotite grains, possibly by hydrothermal leaching.

Reference: Williams and Curtis, 1977, University of California, Publications in Geological Sciences, v 116, p 1-43•