

Age Dating Lassen Peak

Although Howel Williams suggested that the Lassen Peak dacite was “Pleistocene and Quaternary,” Dwight “Rocky” Crandell of the U.S. Geological Survey in the early 1970s suggested that the Lassen Peak dacite was emplaced about 11,000 years ago on the basis of stratigraphic relationships between the dacite and Pleistocene glacial deposits. Professor Phillip Kane from California State University, Northridge—now retired—suggested a similar age for the dacite. Crandell and Kane’s ages stood until 1989 when the second author (M. Clynne) and Humboldt State University graduate student Wendy Gerstel recognized clasts of Lassen Peak dacite in late Pleistocene till (till of Anklin Meadows) approximately 15,000 years old that was underlain by the rhyodacite of Kings Creek (35,000 years old) suggesting that the main phase of the Lassen Peak dacite was between 25,000 and 31,000 years old. They also recognized that moraines formed of the till of Anklin Meadows contained dacite of Lassen Peak and the moraines older than about 40,000 years lacked dacite of Lassen Peak. Thus, Lassen Peak was glaciated and is older than 25,000 years and younger than 40,000 years. Subsequent radiometric age dating of the dacite by Brent Turrin and his colleagues at the USGS showed that Lassen Peak was emplaced 27,000 years ago; only a few years were required for the entire dome mass to be emplaced on the basis of paleomagnetic direction evidence. The dacite dome was dated by argon-40/argon-39 ($^{40}\text{Ar}/^{39}\text{Ar}$) isotope dating technique.