

Hawaiian oral traditions and eruptions of Kīlauea Volcano

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Twenty years ago, I developed an interpretation suggesting that Hawaiian chants [1] involving Pele, the volcano deity, and her youngest sister, Hi'iaka, metaphorically describe the two largest eruptions of Kīlauea since Polynesian arrival in Hawai'i 800-1200 years ago [2]. Since then, an expanded geologic understanding of those eruptions—a great effusive outpouring lasting about 60 years in the 15th century and the following summit-wide collapse of Kīlauea's summit to form the modern caldera at the end of that century—remains consistent with the chants. In addition, more elements of the chants and Hawaiian stories have been identified with volcanic events and processes determined by geologic study. Overlooked in the original interpretation, careful reading suggests that the chants describe a water lake or pond in the bottom of the newly formed caldera [3], consistent with availability of external water to partly drive ensuing explosions. Stratigraphic study has identified the deposit of a subplinian explosive eruption in about 1650 CE that is probably recounted by the famous tale of Pele driving off a suitor by throwing rocks at him and chasing him into the sea [4, 5]. This is one of more than 60 explosive eruptions from Kīlauea's summit caldera between about 1500 and the early 1800s, a time when, I suggest, Pele acquired her reputation of possessing a violent temper. Modern illustrations of Pele overlook this time and always show her in relation to lava flows, perhaps because the volcano has been dominantly effusive for the past 200 years. I remain convinced that Hawaiian oral traditions speak to important past volcanic events, albeit in ways cloaked in imagery, and that they demonstrate the importance of Kīlauea's eruptions to Hawaiian society before Western contact.

[1] Emerson (1915), Pele and Hiiaka: a myth from Hawaii, *Honolulu Star-Bulletin Ltd.*, 250 p.

[2] Swanson (2008), *J Vol Geo Res* 176, 427-431.

[3] Nogelmeier (2013), Epic Tale of Hi'iakaikapoliopole, *Awaiulu Ltd.*, 496 p.

[4] Ellis (1825), Narrative of Tour through Hawaii, *reprinted 1917 by Hawaiian Gazette Co.*, 342 p.

[5] Swanson & Houghton (2018), *Geol. Soc. Am. Spec. Pap.* 538, 159-190.