**Volcanoes have histories, sometimes surprising**

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Every volcano is different. The laws of physics apply everywhere, but each volcano results from a combination of local, regional, deep, and shallow processes that are seldom if ever the same from one volcano to another. Much will continue to be learned from synoptic studies of volcanic regions and types, but detailed research will always be necessary for proper understanding of individual volcanoes and their hazards to society.

Even a single volcano can change its style of eruption for periods of centuries, perhaps permanently, perhaps temporarily. An example of the latter is Kīlauea Volcano, in Hawai‘i. Until recently, Kīlauea was thought be dominantly effusive, with brief, rare periods of explosive activity lasting weeks or less that punctuate a rather steady outpouring of lava flows. That notion developed because all eruptions were effusive during the 200-year period of written observations, except for an explosive 2.5 weeks in 1924. It was assumed that the 200-year period was representative of Kīlauea in general and that the 1924 activity was unusual.

My colleagues and I recently demonstrated that this view of Kīlauea is incorrect. During the past 2500 years, repeated explosive eruptions, principally phreatomagmatic and phreatic, dominated two periods lasting about 1200 and 300 years, respectively. During these periods, the summit apparently had a deep caldera, facilitating interaction of groundwater with magma and hot wall rocks. The supply rate of magma to the surface of the volcano dropped during the explosive periods to only a few percent of that during the intervening dominantly effusive periods. Recognition of this complex history has prompted a rethinking about Kīlauea that involves not only ideas about how magma is supplied to the volcano and what causes its caldera to collapse but also how neighboring communities will have to deal with a return of explosive activity at some unknown future time.

Unraveling Kīlauea’s past continues to involve detailed field work augmented by hundreds of AMS $^{14}C$ ages. There is nothing magic here—just dedicated old-fashioned field work looking at stratigraphic relations and searching for charcoal to date.

Every volcano deserves such treatment. I am not so naïve as to think that this will happen, but it should be an idealistic goal. Excellent examples of such studies exist throughout the world, and they can serve as templates for more such work in Asia and Oceania.

Detailed knowledge about a volcano’s past is the best way we currently have to foresee its future on a decadal to century scale. Geophysical and geochemical monitoring currently done at some volcanoes provides a basis for short term warnings but is less applicable to the long term. Such monitoring can work together with robust knowledge of a volcano’s history to provide a strong basis to influence long-term societal planning.