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Title: Mt. Fuji Holocene eruption history reconstructed from proximal lake sediments and high-density radiocarbon dating

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Abstract

Understanding the eruption history of volcanos located near large population centers is of direct societal relevance. Here we present a 8,000-year lacustrine record that includes previously unreported eruptions of the active Mt. Fuji volcano, which receives approximately 47 million annual visitors with another 40 million living in the adjacent Kanto Plain. A high-fidelity age model is constructed from a number of terrestrial macrofossil and bulk organic radiocarbon measurements and is extremely consistent with the independently determined age of diagnostic tephra layers. In addition to reporting new eruptions, we also present more accurate ages for known eruptions and detect a wider distribution of ejecta for the most

recent summit eruption, that latter of which will alter modeled prevailing wind vector during eruption. Furthermore, closely spaced fall-scoria layers, unlikely to be differentiated as separate events in land-based surveys, will lower the estimated mass of ejecta erupted and in turn reduce calculated magnitude. These results, the first of their kind from a highly populated region, demonstrate the utility of lacustrine sediments as powerful tools for understanding characteristics of volcanic eruptions and will improve disaster mitigation plans for the region.

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