

Bay Area Geophysical Society Seminar Series



Earthquake-derived seismic velocity changes during the 2018 caldera collapse of Kīlauea Volcano

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Abstract:

The 2018 Kīlauea summit caldera collapse produced extraordinary sequences of seismicity and deformation, which significantly impacted the region. Despite the advanced monitoring network at Kīlauea, detailed information about the internal structure of the volcano is limited. Recently developed techniques in seismic interferometry can be used to monitor the internal structure of an active volcano more directly by detecting subtle spatiotemporal changes in seismic wave velocity, but their utility relies on accurate interpretations of its physical underpinnings. Here, we retrospectively apply repeating-earthquake-based seismic interferometry to the 2018 Kīlauea eruption sequence. We find that seismic velocities changed over two distinct time scales, which we correlate with fault development and cyclical crack opening induced by pressure changes within the volcano. These observations provide new insights into the evolution of Kīlauea during its progressive collapse, and more widely could inform future interpretations for near-real-time monitoring at hazardous volcanoes around the world using similar techniques.

Presenter's Bio:



Alicia is a Research Geophysicist with the U.S. Geological Survey California Volcano Observatory (CalVO) at Moffett Field, CA. Her research focuses on the temporal evolution of volcanic seismicity and structure, with the aim to improve volcano monitoring. She received her Ph.D. in 2014 from the University of Washington.

Zoom meeting information:

Zoom ID: 986 7370 2195

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