

Harvard University -- Solid Earth Physics Seminar

Seismology at Active Hawaiian Volcanoes

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Wednesday 7 March, 2:30 pm

4th Floor Faculty Lounge, Hoffman Laboratory, 20 Oxford St.

Since 2008, in addition to an ongoing eruption that continues into its 30th year from a downrift vent, Kilauea volcano has been erupting from a sustained lava lake within its summit caldera. Not unlike the opportunities recognized by Thomas Jaggar when establishing the Hawaiian Volcano Observatory (HVO) a century ago, the Halemaumau summit eruption is offering unique opportunities for exploring and understanding volcanic processes. Now, however, Halemaumau and Kilauea's summit caldera region lie at the heart of HVO's collection of monitoring networks.

Beyond simply tracking seismicity for potentially valuable clues as to when and where eruptions might occur, a principal seismological goal is to obtain physically reasonable descriptions of volcanic seismic sources. In addition, Hawaii experiences significant – on occasion devastating - earthquake activity that, while not directly tied to magmatic processes, is fundamentally related to Hawaii's active volcanism. Understanding these earthquakes is important to improving insights into observed volcanic behaviors as well as seismic hazard mitigation.

Hawaii's abundant collection and complexity of seismicity invite the application of a range of seismological tools, as well as necessitate their merging to arrive at intended improved interpretations. Examples of these will be discussed, including precise relative relocation of earthquake hypocenters, seismic earthquake arrival time tomography, and moment tensor inversion.