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**SPEAKER**

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**TITLE**

Monochromatic Long-Period Seismicity Prior to the 2012 Earthquake Swarm at Little Sitkin Volcano

**ABSTRACT**

Detection of the earliest stages of unrest is one of the most challenging and yet critically needed aspects of volcano monitoring. I investigate a sequence of five unusual long-period (LP) earthquakes that occurred in the days prior to the onset of a months-long volcano-tectonic (VT) earthquake swarm beneath Little Sitkin volcano in the Aleutian Islands during late 2012. The long period earthquakes had two distinctive characteristics: their signals were dominated by a monochromatic spectral peak at approximately 0.57 Hz and they had impulsive P and S-wave arrivals on a seismometer located on Amchitka Island 80 km to the southeast of the volcano. In each case, the monochromatic earthquakes ended with a higher-frequency event after approximately 2 min of duration. I find evidence that the five monochromatic LP earthquakes resulted from the resonance of a tabular magma body at middle crustal depths (15 km) on the western side of Little Sitkin. Based on the resonant frequency and quality factor of the monochromatic LP earthquakes, I infer the magma body to have a lateral extent of 500 m and a thickness of 9 m. I interpret that a magmatic intrusion excited the monochromatic LP earthquakes and subsequently increased the stress beneath the volcano, leading to the onset of the shallow (<10 km depth) VT swarm five days later.

**BIOGRAPHY**

Matt Haney completed a B.Sc. (1999) in Geophysical Engineering and a Ph.D. (2005) in Geophysics at Colorado School of Mines in Golden, CO. After completing his Ph.D., he worked as a postdoctoral appointee in the Geophysics Department at Sandia National Laboratories in Albuquerque, NM, and as a USGS Mendenhall Postdoctoral Fellow at the Alaska Volcano Observatory in Anchorage, AK. He received the J. Clarence Karcher Award from the SEG in 2007. From 2009-2011, he was an Assistant Professor at Boise State University. Since 2011, Matt has been a Research Geophysicist with the USGS at the Alaska Volcano Observatory in Anchorage, AK. His research interests include volcano seismology, surface waves, ambient noise interferometry, array methods, infrasound, and submarine volcanism. Haney is a member of the AGU, SEG, and SSA.