

GEOPHYSICAL SOCIETY OF ALASKA

MAY LUNCHEON



TITLE

Examples of seismic resonance from air-filled voids

SPEAKER

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ABSTRACT

The search for subsurface voids by both direct and indirect means using seismic methods has been ongoing for more than half a century by a number of different practitioners. There are multiple methods employed, including multichannel analysis of surface waves (MASW), refraction tomography, diffracted body waves, backscattered surface waves, and more recently full waveform inversion. Many of these methods can be data-processing intensive—is there a more expedient way to identify the potential for shallow voids? Examples of resonance associated with shallow air-filled voids are shown from experimental seismic surveys. Basic data processing was applied based on previously reported studies to determine whether resonance is observed over known void locations. Expanding the study to voids of different sizes, at varying depths, and in a range of different geologic settings would help to better understand the potential of resonance as a tool for detecting and localizing near-surface voids.

BIOGRAPHY

Steve Sloan is a Research Geophysicist at the U.S. Army Engineer Research and Development Center located in Vicksburg, Mississippi. He specializes in near-surface seismology, including high-resolution shallow seismic reflection, refraction tomography, and surface wave methods. His research has focused on the application of geophysical methods to defense problems, including clandestine tunnel detection, counter improvised explosive device (C-IED) applications, and geophysical characterization of the shallow subsurface in austere environments around the world.

Steve received a B.S. in geology from Millsaps College, and an M.S. and Ph.D. with Honors in geophysics from The University of Kansas. He has authored or co-authored over 100 technical publications related to near-surface geophysics and has received multiple awards for research and development and operational support. Steve actively supports undergraduate and graduate research through research positions at Millsaps College and KU. He currently serves on the Editorial Board of The Leading Edge and is a former Chair of the Near Surface Technical Section of the Society of Exploration Geophysicists. He is also a licensed Professional Geoscientist.