

Charles Hoots

Curriculum Vitae

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Publications

Scholar (link): <https://scholar.google.com/citations?hl=en&user=wofgZpwAAAAJ>

OSTI (link): <https://www.osti.gov/search/semantic:charles%20hoots/author:%22Hoots,%20Charles%20R%22/page:1>

Career Experience

Member of Technical Staff R&D S&E, Sandia National Laboratories 2016 to 2021

Managed, developed, and delivered dozens of multi-lab research and LDRD initiatives in the fields of Computational Geophysics and Data Science. Journal publications, conference talks, and field experiments focused primarily in the study of seismic and infrasound Source Physics, Nuclear Nonproliferation, Machine Learning, and fiber-optic Distributed Acoustic Sensing (DAS). Primarily classified work, currently active DOE Q-Level HSPD-12.

Intern, Sandia National Laboratories Spring 2016

Collaborating with Geophysics Department colleagues to frame an attenuation tomography study, self-directing an assessment of incumbent spectral ratio versus P waveform time domain constrained seismic data processing, demonstrating Member of Technical Staff level of contribution to the lab's remote surface and subsurface geophysical characterization activities

Graduate Researcher, University of New Mexico Fall 2013 to Spring 2016 deployed and maintained the 3-channel broadband, 42 station, 5 km spaced Central California Seismic Experiment (CCSE) array; augmented the relatively high resolution CCSE acquired data with IRIS, Caltech, and Berkley databases; and exploited this data by deriving S_p receiver functions through multi-channel spectral deconvolution, performing common conversion point stacking, and applying scattered wave imaging techniques to map the Great Valley lithosphere-asthenosphere boundary under the advisement of Dr. Brandon Schmandt (Earth and Planetary Sciences Assistant Professor)

Intern, Hawai'i Volcano Observatory (USGS) 2011 through 2012 investigated the movement of magma under the Big Island to develop a 3D tomographic model of Kilauea by locating and cataloging over 800 seismic events mentored by Dr. Paul Okubo (USGS)

Intern, Tate Geological Museum 2008 through Spring 2009 contributed to the recovery of the largest and most complete Columbian Mammoth skeleton in North America through on-site excavation and laboratory processing under the direction of Dr. Kent Sundell (museum lead scientist and mammalian curator)

Education

Phd Candidate, Geophysics, 2023 to current University of Hawai'i SOEST 4.0 GPA. Current research centered on the tilt and compliance correction (ATaCR), harmonic-percussive separation (HPS), and other methods for mitigating noise characteristics in long-period seismic and pressure component event data (e.g. Cascadia, AACSE, Plume, NoMelt, etc.).

MS, Earth and Planetary Sciences Spring 2016, granted University of New Mexico, 3.96 GPA, Brandon Schmandt (advisor), Isabella Anomaly Interruption of the Sharp Lithosphere- Asthenosphere Boundary Beneath California (thesis)

BS, Geology; Mathematics minor Spring 2012, granted University of Hawai'i, 3.93 GPA

Skills and Interests

- Languages: General Mapping Tool (GMT, 5-yrs.), Python (11-yrs.), MATLAB (14-yrs.), C++ (4-yrs.), Javascript (3-yrs.)
- Active/passive RF/Qp/Qs/Vp/Vs imaging and change detection, Source Physics, Infrasound, Ambient Noise
- Passive/active regional broadband, cross-borehole, and DAS imaging
- Seismic ambient noise, Geophysics, mantle dynamics, Data Science, Large Data imaging problems, Snow and wake boarding