*Dr. Benjamin I. Baker*

Research Scientist, University of Utah Seismograph Stations, Department of Geology and Geophysics, University of Utah, Salt Lake City, Utah.

Education:   
Ph.D. Geology (seismology specialty), Rensselaer Polytechnic Institute, 2013.  
B.S. Applied Mathematics, *magna cum laude*, Rensselaer Polytechnic Institute, 2007.

Research and Professional Interests:

Network seismology, machine learning, automatic event detection and classification, computational seismology, earthquake early warning, uncertainty quantification, and earth imaging.

Professional Experience:   
Research Scientist, University of Utah, 2019-present.  
Visiting Lecturer, University of Washington, 2015-2019.

Seismologist, Instrumental Software Technologies, Inc., 2014-2019.

Teaching:

Statistical Methods Applied to Earthquake Seismology, Geo/5920/6920 – University of Utah. This is a machine learning in seismology class. Topics included derivation and application of popular linear and nonlinear machine learning models, data preprocessing strategies, and exercises using popular machine learning frameworks. Fall 2019.

Introduction to Seismology, ESS 412 – University of Washington. Examines stress and strain, travel times, amplitude and phase, surface waves, the elastic and acoustic wave equations, and source theory, including moment tensors and radiation patterns. Winter 2017, Winter 2018.

Select Recent Publications and Abstracts:

**Baker B.**, A. Armstrong, K. Pankow, and K. Koper (2023), Using the University of Utah message Passing System to help realize real-time machine learning modules in network operations, Presented at SSA, San Juan, Puerto Rico, 17-20 Apr.

**Baker B.**, A. Armstrong, K. Pankow, and K. Koper (2022), On-premises integration of machine learning models at UUSS – Distributed and parallel computing, Presented at SSA, Bellevue, Washington, 19-22 Apr.

Wells D., F.C. Lin, K. Pankow, **B. Baker**, and J. Bartley (2022), Combining dense seismic arrays and broadband data to image the subsurface velocity structure in geothermally active south-central Utah, *JGR: Solid Earth*, doi: 10.1029/2022JB024070.

Mesimeri M., K. Pankow, **B. Baker**, and J.M. Hale (2021), Episodic earthquake swarms in the Mineral Mountains, Utah driven by the Roosevelt Hydrothermal System, *JGR: Solid Earth*, doi: 10.1029/2021JB021659.

**Baker, B.,** M Holt, K. Pankow, K. Koper, and J. Farrell (2021), Monitoring the 2020 Magna, Utah earthquake sequence with nodal seismometers and machine learning, *Seism. Res. Lett*., v. 92, 787-801.

Pang G., K. Koper, M. Mesimeri, K. Pankow, **B. Baker**, J. Farrell, J. Holt, J. Hale, R. Burlacu, J. Pechmann, K. Whidden, M. Holt, A. Allam, C. DuRoss (2020), Seismic analysis of the 2020 Magna, Utah, earthquake sequence: Evidence for a listric Wasatch Fault, *Geophysical Research Letters*, v. 47 (18) e2020GL089798.

**Baker, B.**, J. Farrell, and Z.E. Ross (2020), Applying deep learning to the 2008 Yellowstone Lake swarm sequence, CNLS, Albuquerque, New Mexico, 16-20 Mar.

**Baker, B.**, K. Koper, and K. Pankow (2019), Expediting the UUSS’s response to the Soda Springs, Idaho aftershock sequence, AGU Fall Meeting Abstract, S21H-0622.

Crowell, B.W., D.A. Schmidt, P. Bodin, J.E. Vidale, **B. Baker**, S. Barrientos, and J. Geng (2018), G-FAST earthquake early warning potential for great earthquakes in Chile, *Seism. Res. Lett*., v. 89, 542-556.

**Baker, B.**, P. Friberg, and J. Stachnik (2018), Classification strategies applied to event nucleation and phase association, AGU Fall Meeting Abstract, S33E-0633.

**Baker, B.** (2017), Towards interferometric earthquake location for near real-time monitoring, AGU Fall Meeting Abstract, S21C-0743.

**Baker, B.**, J. Stachnik, P. Friberg (2017), Parallel grid-search moment tensor estimation, Presented at SSA, Denver, Colorado, 18-20 Apr.

**Baker, B.**, and S.W. Roecker (2015), Estimation of earthquake source properties along the East African Rift using full waveforms, AGU Fall Meeting Abstract, S33C-2801.

**Baker, B.**, and S.W. Roecker (2014), A full waveform tomography algorithm for teleseismic body and surface waves in 2.5 dimensions, *Geophys. J. Int*., v. 198, 1775-1794.

**Baker, B.** and P. Friberg (2014), Implementation and testing of a real-time 3-component phase picking program for Earthworm using the CECM algorithm, AGU Fall Meeting Abstract, S43A-4537.

Roecker, S.W., **B. Baker**, and J. McLaughlin, (2010), A finite-difference algorithm for full waveform teleseismic tomography, *Geophys. J. Int*., v. 181, 1017-1040.