TECHNICAL PROGRAM

Tuesday, 18 April—Oral Sessions
Presenting author is indicated in bold.

Time	*Plaza Ballroom D*	*Plaza Ballroom E*	*Plaza Ballroom F*	*Governor's Square 14*
	Paleoseismology of Subduction Earthquake Cycles Session Chairs: Rob Witter, Ian Shennan.	**Forecasting Aftershock Sequences in the Real World** Session Chairs: Andrew Michael, Matt Gerstenberger, Warner Marzocchi.	**Earthquake Source Parameters: Theory, Observations and Interpretations** Session Chairs: Vaclav Vavrycuk, Grzegorz Kwiatek, German Prieto.	**Numerical Modeling of Earthquake Ground Motion, Rupture Dynamics and Seismic Wave Propagation** Session Chairs: Peter Moczo, Steven Day, Jozef Kristek.
8:30 A.M.	INVITED: Implications of the Kaikoura Earthquake on Hikurangi Subduction Seismogenesis, New Zealand: Insights from Paleoseismology. **Berryman, K.**, Clark, K., Cochran, U., Van Dissen, R., Langridge, R., Little, T., Litchfield, N., Villamor, P., Hamling, I., Wallace, L., Bannister, S.	Forecasting Aftershocks and the Complexity of Implementing Simple Models. **Michael, A. J.**, Field, E. H., Hardebeck, J. L., Llenos, A. L., Page, M. T., van der Elst, N., Jeria, C., Singhal, S., Chen, D.	INVITED: A New Strategy for Earthquake Focal Mechanisms Using Waveform-Correlation-Derived Relative Polarities and Cluster Analysis: Application to a Fluid-Driven Earthquake Swarm. **Shelly, D. R.**, Hardebeck, J. L., Ellsworth, W. L., Hill, D. P.	Broadband Synthetic Seismograms for Magnitude 9 Earthquakes on the Cascadia Megathrust Derived From 3D Finite-Difference Simulations and Stochastic Synthetics. **Frankel, A.**, Wirth, E., Vidale, J., Stephenson, W., Marafi, N.
8:45 A.M.	INVITED: The Application of Diatoms to Reconstruct the History of Subduction Zone Earthquakes and Tsunamis. **Dura, T.**, Hemphill-Haley, E., Sawai, Y., Horton, B. P.	A Prototype Operational Earthquake Loss Model for California Based on UCERF3-ETAS – A First Look at Valuation. **Field, E. H.**, Porter, K., Milner, K. R.		Various Modes of Rupture Directivity as Inferred from Joint Source Inversions and Ground Motion Simulations. **Koketsu, K.**, Kobayashi, H., Miyake, H.
9 A.M.	INVITED: Limits of Coastal Evidence for Large Subduction Earthquakes: How Big is Still Too Small to Detect?. **Briggs, R. W.**, Barnhart, W. D.	Characterizing the Triggering Susceptibility of Characteristic Faults. **Page, M. T.**, van der Elst, N. J., Shaw, B. E.	Estimating Moment Tensors Using Virtual Seismometers. Morency, C., **Matzel, E. M.**	A Blind Test of the Local-Scale Adjoint Tomography. Kubina, F., Michlik, F., **Moczo, P.**, Kristek, J., Stripajova, S.
9:15 A.M.	INVITED: STUDENT: Sedimentary Records from Lakes: How They Can Help Improve Our Understanding of Subduction Earthquake Cycles in Alaska. **Praet, N.**, Moernaut, J., Van Daele, M., Haeussler, P. J., De Batist, M.	Operational Earthquake Forecasting of Aftershocks for New England. **Ebel, J. E.**, Fadugba, O., Moulis, A., Dahal, N. R., Kafka, A. L.	Analysis of the 2016 Seismic Sequence in Central Italy. **Braun, T.**, Cesca, S., Grigoli, F., Kriegerowski, M., Lopez Comino, J. A., Dahm, T.	Validation of a 3D Geological Model for the Numerical Simulation of Earthquake Ground Motion in Emilia (Italy). Klin, P., Laurenzano, G., Romano, M. A., **Priolo, E.**, Martelli, L.

Time	*Governor's Square 15*	*Governor's Square 16*	*Governor's Square 12*
	Varied Modes of Fault Slip and their Interactions—Slow Earthquakes, Creep to Mega Quakes Session Chair: Abhijit Ghosh.	**Computational Infrastructure and Data for Enhancing Earthquake Science** Session Chairs: Lisa Grant Ludwig, Andrea Donnellan.	**Novel Approaches to Understanding Active Volcanoes** Session Chairs: Ninfa Bennington, Stephen McNutt, Jeremy Pesicek, Richard Aster, Matthew Haney.
8:30 A.M.	INVITED: Interaction between Slow and Fast Slips in the Japan Trench: Prospect from Near Field Ocean Bottom Seismic and Geodetic Observations. **Ito, Y.**, Katakami, S., Ohta, K., Uemura, M., Muramoto, T., Garcia, E. S. M.	INVITED: Science Gateways for Enhancing Earthquake Science. **Pierce, M. E.**, Wang, J., Dhumal, H., Marru, S., Donnellan, A.	INVITED: Volcanic Tremor and Plume Height Hysteresis from the March 2016 Eruption of Pavlof Volcano, Alaska. **Fee, D.**, Haney, M. M., Matoza, R. S., Van Eaton, A. R., Cervelli, P., Schneider, D. J., Iezzi, A. M.
8:45 A.M.	Aleutian Array of Arrays (A-Cubed): Simultaneous Imaging of Continuous Activity of Slow Earthquakes and Volcanic System in the Aleutian Islands. **Ghosh, A.**, Li, B.	INVITED: The SCEC Software Ecosystem for Enhancing Earthquake System Science Research. **Maechling, P. J.**, Bielak, J., Callaghan, S., Cui, Y., Field, E., Gill, D., Goulet, C. A., Graves, R., Jordan, T. H., Milner, K., Olsen, K., Taborda, R., Shaw, J., Silva, F.	Ground-Coupled Air Waves at Pavlof Volcano, Alaska During the 2007 Eruption and Their Potential for Eruption Monitoring. Smith, C. M., **McNutt, S. R.**, Thompson, G.
9 A.M.	Seismic Coupling of Fast and Slow Ruptures on a 760 mm Laboratory Fault. **McLaskey, G. C.**, Yamashita, F.	INVITED: CIG Community Standards and Best Practices for Scientific Software. **Hwang, L. J.**, Kellogg, L. H.	Detecting Magmatic Activity over Multiple Volcanic Eruption Cycles via Ambient Noise Interferometry: A Study of Veniaminof Volcano, Alaska. **Bennington, N. L.**, Haney, M. M.
9:15 A.M.	STUDENT: Very Low Frequency Earthquakes (VLFEs) in Cascadia during Episodic Tremor and Slip (ETS) Events and Inter-ETS Period. **Hutchison, A. A.**, Ghosh, A.	INVITED: UNAVCO Computational Infrastructure Enhancing Earthquake Science. Miller, M. M., Meertens, C. M., Mattioli, G. S., **Mencin, D. J.**	INVITED: Seismic Evidence for a Cold and Hydrated Mantle Wedge beneath Mount St Helens. **Hansen, S. M.**, Schmandt, B., Levander, A., Kiser, E., Creager, K. C., Abers, G. A., Mann, M. E., Vidale, J. E.

Tuesday, 18 April (*continued*)

Time	*Plaza Ballroom D*	*Plaza Ballroom E*	*Plaza Ballroom F*	*Governor's Square 14*
	Paleoseismology of Subduction Earthquake Cycles	**Forecasting Aftershock Sequences in the Real World**	**Earthquake Source Parameters…**	**Numerical Modeling of Earthquake Ground Motion…**
9:30 A.M.	INVITED: 3D Simulations of Megathrust Earthquakes in Cascadia – Implications of Paleoseismic Evidence for the Down-Dip Rupture Extent and Along-Strike Rupture Variability. **Wirth, E. A.,** Frankel, A.	The Time-History of a Forecast: The Case Study of Central Apennines. **Segou, M.**, Mancini, S.	P-Waveform Inversion for Moment Tensors Using the Principal Component Analysis. **Vavrycuk, V.**, Adamova, P.	Using CyberShake 3D Ground Motion Simulation Workflows to Advance Central California PSHA. **Callaghan, S. A.**, Maechling, P. J., Goulet, C. A., Milner, K. R., Graves, R. W., Olsen, K. B., Jordan, T. H.
9:45 – 10:45 A.M.	Posters and Break			
	Paleoseismology of Subduction Earthquake Cycles (continued)	**Forecasting Aftershock Sequences in the Real World** (continued)	**Earthquake Source Parameters: Theory, Observations and Interpretations** (continued)	**Numerical Modeling of Earthquake Ground Motion, Rupture Dynamics and Seismic Wave Propagation** (continued)
10:45 A.M.	Recording and Preservation Sensitivities for Paleoseismic Data on the Cascadia Margin. **Goldfinger, C.**	Forecasting the 2016 Bombay Beach, CA Swarm. **Llenos, A. L.**, Page, M. T., van der Elst, N. J.	INVITED: Radiated Energy Enhancement and Rupture Complexity of Large Subduction-Zone Earthquakes. Ye, L., **Lay, T.**, Kanamori, H.	On the Fast and Efficient Broadband Simulation of Earthquake Strong-Motion with Basin Generated Surface Waves. **Halldorsson, B.**, Meza-Fajardo, K., Papageorgiou, A. S.
11 A.M.	Temporal Variability of Interseismic Strain Accumulation along Subduction Megathrusts, on Timescales of Decades to Centuries. **Meltzner, A. J.**, Philibosian, B., Sieh, K.	Earthquake Forecasting for the November 2016 Kaikoura, New Zealand Mw 7.8 Earthquake. **Gerstenberger, M. C.**, Rhoades, D., Christophersen, A., Horspool, N., Harte, D., Bannister, S., Fry, B., Wallace, L.	STUDENT: Another Look at the Foreshocks of the 1999 Mw 7.1 Hector Mine, California, Earthquake. **Yoon, C. E.**, Ellsworth, W. L., Beroza, G. C.	STUDENT: Salvus: A Flexible Open-Source Package for Waveform Modeling and Inversion from Laboratory to Global Scales. **Afanasiev, M.**, Boehm, C., van Driel, M., Krischer, L., May, D., Rietmann, M., Fichtner, A.
11:15 A.M.	The December 25, 2016, M7.6, Southern Chile Earthquake and its Relation to the 1960 Rupture. **Barrientos, S. E.**, CSN Team	INVITED: Challenges and Successes of Communicating the M7.8 Kaikoura Earthquake Operational Earthquake Forecast. **McBride, S. K.**, Gerstenberger, M., Potter, S., Christophersen, A. M., Rhoades, D., Balfour, N.	Complex Spatiotemporal Evolution of Seismicity and Source Parameters of the 2008 Mw 4.9 Mogul Earthquake Swarm in Reno, Nevada. **Ruhl, C. J.**, Abercrombie, R. E., Smith, K. D., Zaliapin, I.	Off-Fault Deformation and Shallow Slip Deficit from Dynamic Rupture Simulations with Fault Zone Plasticity. **Roten, D.**, Olsen, K. B., Day, S. M.

Time	*Governor's Square 15*	*Governor's Square 16*	*Governor's Square 12*
	Varied Modes of Fault Slip and their Interactions…	**Computational Infrastructure and Data…**	**Novel Approaches to Understanding Active Volcanoes**
9:30 A.M.	INVITED: Repeating and Triggered Slow Slip Events in the Near-Trench Region of the Nankai Trough Detected by Borehole Observatories. **Saffer, D. M.**, Araki, E., Kopf, A. J., Wallace, L. M.	Simulation Based Earthquake Forecasting with RSQSim. **Gilchrist, J. J.**, Jordan, T. H., Dieterich, J. H., Richards-Dinger, K. B., Shaw, B. E.	INVITED: The iMUSH (imaging Magma Under mount St. Helens) Project. **Creager, K. C.**, Ulberg, C. W., Vidale, J. E., Meng, X., Han, J., Abers, G. A., Crosbie, K., Schultz, A., Bowles-Martinez, E., Kiser, E., Levander, A., Moran, S., Denlinger, R., Thelen, W., Sisson, T., Blatter, D., Clynne, M., Peacock, J., Bedrosian, P., Bachmann O., Wanke, M., Hansen, S., Schmandt, B., Hill, G. J.
9:45 – 10:45 A.M.	Posters and Break		
	Varied Modes of Fault Slip and their Interactions—Slow Earthquakes, Creep to Mega Quakes (continued)	**Computational Infrastructure and Data for Enhancing Earthquake Science** (continued)	**Novel Approaches to Understanding Active Volcanoes** (continued)
10:45 A.M.	Large Earthquakes and Creeping Faults. **Harris, R. A.**	STUDENT: Collaboratory for Interseismic Simulation and Modeling (CISM). **Milner, K. R.**, Jordan, T. H., Gilchrist, J. J., Goulet, C. A., Maechling, P. J., Richards-Dinger, K. B., Dieterich, J. H., Field, E. H.	Revisiting Seismicity Prior and during Cotopaxi´s 2015 Eruptive Activity, Ecuador. **Ruiz, M. C.**, Hernández, S., Viracucha, E. G., Pacheco, D., Mothes, P. A.
11 A.M.	INVITED: Late-Interseismic State of the Alpine Fault and the Australia–Pacific Plate Boundary in the Central South Island, New Zealand — Constraints from Scientific Drilling, Low-Frequency Earthquakes, and Microseismicity. **Townend, J.**, Deep Fault Drilling Project (DFDP) Science Team	Software vs. Data: The FORCE11 Citation Principles. **Hwang, L. J.**, Katz, D. S., Kellogg, L. H., Niemeyer, K. E., FORCE11 Software Citation Working Group	The Use of Low-Amplitude Non Harmonic Tremor to Estimate Long-Term Gas Emission at Pacaya Volcano. **Waite, G. P.**, Lanza, F.
11:15 A.M.	Systematic Search for Repeating Earthquakes in New Zealand. **Peng, Z.**, Fry, B., Wallace, L., Yao, D.	Using GPU Clusters to Detect Millions of Small Earthquakes in Southern California with Template Matching. **Ross, Z. E.**, Hauksson, E., Maechling, P., Beroza, G. C.	Magma Migration at Active Volcanoes in the North Kivu Region Tracked Using Seismic Techniques and Space-Based Sulfur Dioxide Emission Estimates. **Barrière, J.**, Oth, A., Theys, N., d'Oreye, N., Kervyn, F.

Tuesday, 18 April (*continued*)

Time	*Plaza Ballroom D*	*Plaza Ballroom E*	*Plaza Ballroom F*	*Governor's Square 14*
	Paleoseismology of Subduction Earthquake Cycles	**Forecasting Aftershock Sequences in the Real World**	**Earthquake Source Parameters…**	**Numerical Modeling of Earthquake Ground Motion…**
11:30 A.M.	Paleoseismology of Large Earthquakes Resulting from Continental Subduction along the Himalayan Frontal Thrust of Nepal. **Wesnousky, S. G.**, Kumahara, Y., Chamlagain, D., Pierce, I. K., Angster, S., Reedy, T.	Operational Earthquake Forecasting Six Years into the Canterbury Sequence: Lessons for Initial and Ongoing Communications. **Wein, A. M.**, Becker, J., McBride, S., Potter, S.	Seismic Source Parameters of the Induced Seismicity at the Geysers Geothermal Area, California, by a Generalized Inversion Approach. **Picozzi, M.**, Oth, A., Parolai, S., Bindi, D., De Landro, G., Amoroso, O., Emolo, A.	EDGE: Extreme-Scale Discontinuous Galerkin Environment. **Breuer, A.**, Heinecke, A., Cui, Y.
11:45 A.M.	Possible Sedimentary Evidence for Paleoearthquakes and the 2016 November M 7.8 Kaikoura Earthquake along the Hikurangi Subduction Zone. Barnes, P. M., Orpin, A. R., Howarth, J., **Patton, J. R.**, Lamarche, G., R/V Tangaroa Shipboard Science Team	INVITED: Japanese New Guidelines for the Seismic Forecast Information after Big Earthquakes. **Kamaya, N.**, Hashimoto, T.	Source Parameters for Events in the Central and Eastern United States. **Pasyanos, M. E.**, Gok, R., Barno, J. G.	Toward Exascale Seismic Simulations with SW4. **Petersson, N. A.**, Sjogreen, B., Rodgers, A. J.
Noon–2:15 P.M.	Lunch			
	The Subduction Zone Observatory Session Chairs: Diego Melgar, Lee Liberty, Jeff Maguire.	**Advances in Earthquake Early Warning** Session Chairs: Elizabeth Cochran, Angela Chung, Douglas Given.	**Earthquake Source Parameters: Theory, Observations and Interpretations** (continued)	**Integrated and Geophysical Investigations for Site Characterization of Critical Facilities and Infrastructure** Session Chairs: Jamey Turner, Jeffrey Bachhuber, Osman El Menchawi, Daniel O'Connell.
2:15 P.M.	Updates on The Subduction Zone Observatory Workshop. **McGuire, J. J.**, Melgar, D., Liberty, L. M.	INVITED: How "Good" are Real-Time Ground Motion Predictions from Earthquake Early Warning Systems? **Meier, M. A.**	INVITED: Earthquake Stress Drop: Source Scaling, Uncertainties, and Complexity of Small Earthquakes. **Abercrombie, R. E.**	INVITED: Measurement- and Proxy-Based VS30 Estimates. **Yong, A.**
2:30 P.M.	INVITED: STUDENT: Crustal Deformation Following Great Subduction Earthquakes Controlled by Mantle Rheology and Earthquake Magnitude. **Sun, T.**, Wang, K., He, J.	The Effect of Ground-Motion Variability on the Accuracy of Earthquake Early Warning. **Minson, S. E.**, Baltay, A. S., Meier, M. A., Hanks, T. C., Cochran, E. S.	Improving Earthquake Source Parameters Estimation with Adaptive Window Spectral Analysis. **Prieto, G. A.**	INVITED: Direct Evaluation of S-Wave Amplification Factors from Microtremor Horizontal-to-Vertical Ratios: Empirical Corrections to "Nakamura" Method. **Kawase, H.**, Nagashima, F., Nakano, K., Mori, Y.

Time	*Governor's Square 15*	*Governor's Square 16*	*Governor's Square 12*
	Varied Modes of Fault Slip and their Interactions…	**Computational Infrastructure and Data…**	**Novel Approaches to Understanding Active Volcanoes**
11:30 A.M.	INVITED: Enhanced Detection of Earthquake Swarms in Southern Mexico and Relationships to Slow Slip. **Brudzinski, M. R.**, Fasola, S. L., Holtkamp, S. G., Skoumal, R. J., Cabral-Cano, E., Arciniega-Ceballos, A.	Using GeoGateway to Explore Off-Fault Deformation along the San Andreas Fault in the Carrizo Plain, CA. **Grant Ludwig, L.,** Donnellan, A., Parker, J. W.	STUDENT: Magma Imaging with Seismic Dense Array: A Case Study from Krafla, Iceland. **Kim, D.**, Brown, L. D., Árnason, K., Águstsson, K., Blanck, H.
11:45 A.M.	Shallow and Deep Creep Events Observed and Quantified Arrays of Creepmeters and Strainmeters. **Bilham, R.**, Mencin, D. J., Hodgkinson, K.	STUDENT: Tsunami Early Warning through Earthquake, Tsunami, and Ionosphere Simulation. **Wilson, J. M.**, Rundle, J. B., Donnellan, A., Song, Y. T., Komjathy, A., Savastano, G.	INVITED: Using Dense Geophone Arrays to Image Subsurface Hydrothermal Structure in the Upper Geyser Basin, Yellowstone National Park. **Farrell, J.**, Lin, F. C., Wu, S. M., Smith, R. B., Karplus, M.
Noon–2:15 P.M.	Lunch		
	Earthquake Interaction and Triggering: From Near Field to Far Field, From Natural to Induced Session Chairs: Wenyuan Fan, Andy Barbour, Xiaowei Chen.	**Seismology Software Tools That Improve What We Do and How We Do It** Session Chairs: Michelle Guy, Eric Martinez.	**Closing the Gap between Laboratory-based Damping Models and Observed Attenuation of Seismic Waves in the Field** Session Chairs: Albert Kottke, Ashly Cabas.
2:15 P.M.	What Really Triggers Earthquakes? **Segou, M.**, Parsons, T.	INVITED: The ANSS Station Information System: A Centralized Station Metadata Repository for Populating, Managing and Distributing Seismic Station Metadata. **Yu, E.**, Acharya, P., Jaramillo, J., Kientz, S., Hauksson, E.	STUDENT: Insights into Small-Strain Damping from Borehole Array Recordings. **Tao, Y.**, Rathje, E.
2:30 P.M.	Preparation Phase of a M4.2 Earthquake below the Eastern Sea of Marmara Offshore Istanbul Observed from GONAF Downhole Recordings. **Bohnhoff, M.**, Malin, P. E., Bluemle, F., Dresen, G., Ceken, U., Kadirioglu, F. T., Kartal, R. F., Yanik, K.	INVITED: The Global Earthquake Model (GEM) Suite of Tools for Seismic Hazard Modeling. **Pagani, M.**, Weatherill, G. A., Garcia, J., Poggi, V., Styron, R.	Adjustments to Small-Strain Damping and Soil Profile Assumptions to Improve Site Response Predictions. **Kaklamanos, J.**, Bradley, B. A., Moolacattu, A. N., Picard, B. M.

Tuesday, 18 April (*continued*)

Time	*Plaza Ballroom D*	*Plaza Ballroom E*	*Plaza Ballroom F*	*Governor's Square 14*
	The Subduction Zone Observatory	**Advances in Earthquake Early Warning**	**Earthquake Source Parameters…**	**Integrated and Geophysical Investigations…**
2:45 P.M.	INVITED: STUDENT: Ocean Bottom Pressure Measurements for Detecting Vertical Seafloor Deformation. **Cook, M. J.**, Sasagawa, G. S., Zumberge, M. A., Wilcock, W. S. D., Schmidt, D. A., Roland, E.	Comparing Operational Performance of the Virtual Seismologist and FinDer for Earthquake Early Warning. **Massin, F.**, Boese, M., Cauzzi, C. V., Clinton, J. F.	Self-Similarity of M1 to 8 Earthquakes through Ground-Motion Modeling, and Special Attributes of Small Magnitude Earthquakes. **Baltay, A.**, Hanks, T. C., Vernon, F. L.	INVITED: State-of-Practice of Site Characterization: The Role of Seismic Investigation and Land Management Policies . **D'Amico, S.**, Albarello, D.
3 P.M.	INVITED: Geometrical Effects of Megathrust Faults on Slow Slip Events and Seismic Ruptures. **Liu, Y. J.**, Li, D., Yu, H. Y.	G-FAST Earthquake Early Warning Performance for Simulated Cascadia Megathrust Events. **Crowell, B. W.**, Melgar, D., Schmidt, D. A., Bodin, P., Vidale, J. E.	STUDENT: Stress Drop and Source Scaling of Recent Earthquake Sequences in the Central and Eastern United States. **Wu, Q.**, Chapman, M. C.	INVITED: Site Characterization for Safety-Related Nuclear Facilities: ASCE 1 Update. **Zafir, Z.**, Bachhuber, J. L.
3:15 P.M.	Rupture Segmentation and Variable Coupling along the Sunda Megathrust: The Case from Geodesy for an Ocean-Bottom Seismometer Array Offshore Sumatra. **Hill, E. M.**, Meltzner, A. J., Lindsey, E. O., Hananto, N., Muzli, M., Feng, L., Wei, S., Salman, R., Bradley, Sieh, K., McGuire, J.	INVITED: Fakequakes: Broadband Simulation for Hazards. **Melgar, D.**, Ruhl, C. J., Allen, R. M.	On the Variation of Strong-Motion Parameters in the Context of the Specific Barrier Model. **Halldorsson, B.**, Papageorgiou, A. S., Sonnemann, T., Hrafnkelsson, B.	INVITED: Update of Regulatory Guide 1.132. Wang, W., **Heeszel, D.**
3:30–4:30 P.M.	Posters and Break			
	The Subduction Zone Observatory (continued)	**Advances in Earthquake Early Warning** (continued)	**To Tweet or Not To Tweet: Effective Use of Social Media for Citizen Science and Science Communication** Session Chairs: Susan Hough, Julian Lozos, Christine Goulet, Paul Earle.	**Integrated and Geophysical Investigations for Site Characterization of Critical Facilities and Infrastructure** (continued)
4:30 P.M.	The Alaska-Aleutian Megathrust Fault System: Upper Plate Response to Plate Boundary Conditions. **Liberty, L. M.**, Haeussler, P. H., Ramos, M.	INVITED: Earthquake Early Warning for the West Coast of the U.S.. **Hartog, J. R.**	INVITED: Social Media in the Wake of a Quake: A Science Journalist's Perspective. **Witze, A.**	Inversion of Irregular Vibroseis Data For 3D Shallow Velocity Structure. **O'Connell, D. R. H.**, Chen, W. Y., Fernandez, A., Travasarou, T.

Time	*Governor's Square 15*	*Governor's Square 16*	*Governor's Square 12*
	Earthquake Interaction and Triggering…	**Seismology Software Tools That Improve What We Do…**	**Closing the Gap between Laboratory-based Damping Models…**
2:45 P.M.	Modeling Repeating Earthquake Interactions: Triggering Effect from Nearby Microseismicity. **Chen, K. H.**, Johnson, K., Burgmann, R., Nadeau, R. M.	INVITED: Product Distribution Layer. **Fee, J. M.**	INVITED: Laboratory-Based Measurements of Material Damping of Soil and Rock. **Stokoe, K. H.**
3 P.M.	Regional and Stress Drop Effects on Aftershock Productivity of Large Megathrust Earthquakes. **Wetzler, N.**, Brodsky, E. E., Lay, T.	INVITED: Libcomcat: Tools for Automated Earthquake Information Extraction. **Hearne, M. G.**	INVITED: Seismic Wave Attenuation in the Shallow Geological Layer: Results from Different Approaches and Open Issues. **Parolai, S.**
3:15 P.M.	INVITED: Remote Triggering of Microearthquakes and Deep Tectonic Tremor in New Zealand Following the 2016 M7.8 Kaikoura Earthquake. **Peng, Z.**, Fry, B., Chao, K., Meng, X.	STUDENT: Using a Fast Similarity Search Algorithm to Identify Repeating Earthquake Sequences. **Shakibay Senobari, N.**, Funning, G. J.	INVITED: Capturing the Source and Site High Frequency Attenuation Properties (κ0). **Bora, S. S.**, Cotton, F., Mayor, J.
3:30–4:30 P.M.	Posters and Break		
	Earthquake Interaction and Triggering: From Near Field to Far Field, From Natural to Induced (continued)	**Geoacoustics: Infrasound and Beyond** Session Chairs: Daniel Bowman, Stephen Arrowsmith, Omar Marcillo.	**Theoretical and Practical Advances in Ambient Noise and Coda Studies** Session Chairs: Julien Chaput, Hsin-Hua Huang.
4:30 P.M.	Testing for the 'Predictability' of Dynamically Triggered Earthquakes in Geysers Geothermal Field. **Aiken, C.**, Meng, X., Hardebeck, J.	STUDENT: Quantifying River Turbulence: New Insights into the Fluvial Seismo-Acoustic Field. **Ronan, T. J.**, Lees, J. M., Mikesell, T. D., Anderson, J.	STUDENT: Estimating the Effect of Non-Diffuse Noise on Ambient Seismic Noise Cross-Correlations in Southern California. **Liu, X.**, Beroza, G. C., Nakata, N.

Tuesday, 18 April (*continued*)

Time	*Plaza Ballroom D*	*Plaza Ballroom E*	*Plaza Ballroom F*	*Governor's Square 14*
	The Subduction Zone Observatory	**Advances in Earthquake Early Warning**	**To Tweet or Not To Tweet…**	**Integrated and Geophysical Investigations…**
4:45 P.M.	INVITED: Plate Boundary Transitions in SZO - Learning from Processes at the Mendocino Triple Junction. **Furlong, K. P.**	Towards an Earthquake and Tsunami Early Warning in the Caribbean: The Puerto Rico Case. **Huerfano, V. A.**, Vanacore, L., Lopez, A.	INVITED: USGS Social Media Strategy. **Horvath, S. R.**, Other panel participants: Paul Earle (USGS) and Susan Hough (USGS)	Advancements in Identifying Subsurface Abandoned Mine Voids: Integration of Historic Data, LiDAR, Multi-Method Surface Seismic, Borehole Imaging, and Remediation, Wyoming USA. **Turner, J. P.**, O'Connell, D. R. H., Nuttall, J., Pfeiffer, J., Steele, L.
5 P.M.	STUDENT: Defining the Temporal Relationship between Afterslip and Aftershocks Using Dense Seismic and Geodetic Networks in Nicoya, Costa Rica. **Hobbs, T. E.**, Newman, A. V., Peng, Z.	Rapid Determination of P-Wave-Based Energy Magnitude: Insights on Source Parameter Scaling of the 2016 Central Italy Earthquake Sequence. **Picozzi, M.**, Bindi, D., Brondi, P., Di Giacomo, D., Parolai, S., Zollo, A.	INVITED: Social Media for Scientists: Why, Where and How. **Bohon, W.**	Slip Rate of the Hosgri Fault Based on the Sedimentary Record of Plio-Quaternary Sediments within a Right-Stepping Extensional Pull-Apart. McGinnis, R. N., **Stamatakos, J. A.**, Morris, A. P., Ferrill, D. A., Smart, K. J., Juckett, M. R.
5:15 P.M.	INVITED: Three-Dimensional Velocity Models from the iMUSH Active-Source Seismic Experiment. **Kiser, E.**, Levander, A., Zelt, C., Palomeras, I., Schmandt, B., Hansen, S., Creager, K., Ulberg, C., Abers, G., Crosbie, K., Harder, S.	Triggered Earthquake During the 2016 Kumamoto Earthquake (Mw7.0): Importance of Real-Time Shake Monitoring for Earthquake Early Warning. **Hoshiba, M.**, Ogiso, M.	INVITED: To Tweet or Not To Tweet: Is it Even a Question? **Bossu, R.**, Roussel, F., Fallou, L., Steed, R., Farras, C., Mazet Roux, G.	Empirical Characterization of Extreme Ground Motion at Soft-Sediment Sites. **Pilz, M.**, Fäh, D.
5:30 P.M.	Strategies for Developing Capacity Building, Education, and Outreach in Conjunction with a Subduction Zone Observatory. **Pulliam, J.**, Charlevoix, D. J., Bartel, B. A.	INVITED: Towards Internet of Things Earthquake Early Warning: A Pilot Network in Chile. **Brooks, B. A.**, Minson, S. E., Böse, M., Ericksen, S., Barrientos, S., Baez, J. C., Cochran, E., Smith, D. E., Duncan, C., Guillemot, C., Murray, J. R., Langbein, J. O., Glennie, C. L.	Shaping the Earth, One Tweet at a Time. **Rowan, L.**, Bartel, B. A.	Constraining Shallow Shear Wave Velocities Using the Initial Portion of Local P Waves Recorded at ANSS and EarthScope Transportable Array in the CEUS.. **Hosseini, M.**, Somerville, P. G., Skarlatoudis, A., Bayless, J., Thio, H. K.
5:45–6:30 P.M.	Pint and Poster			
6:30–7:30 P.M.	Ignite Talks Plenary			
7:30–9 P.M.	Student Reception and Early Career Reception			

Time	*Governor's Square 15*	*Governor's Square 16*	*Governor's Square 12*
	Earthquake Interaction and Triggering…	**Geoacoustics: Infrasound and Beyond**	**Theoretical and Practical Advances in Ambient Noise and Coda Studies**
4:45 P.M.	INVITED: Investigating Earthquake Stress Release from Triggered Seismicity in Geothermal and Induced Seismicity Regions. **Velasco, A. A.**, Alfaro-Diaz, R.	INVITED: Prospects for Enhanced Infrasound Sensitivity from a Balloon-Borne Platform. **Young, E. F.**, Bowman, D., Arrowsmith, S. J., Boslough, M., Lees, J., Klein, V., Abernathy, R., Hargather, M.	Seismic Interferometry at a Large, Dense Array: Imaging the Source Physics Experiment. **Matzel, E. M.**, Mellors, R. J., Magana-Zook, S.
5 P.M.	On the Importance of Surface Deformation for Understanding Time-Dependent Seismic Hazard Due to Fluid-Injection. **Shirzaei, M.**	Socorro and Wanaka: Balloon Borne Infrasound Expeditions. **Lees, J. M.**, Bowman, D. C.	On the Application of Super-Resolution Array Processing Methods for Characterizing Earth's Short-Period Seismic Noise Field. **Marcillo, O. E.**, Euler, G., Koper, K.
5:15 P.M.	A Physical Mechanism for Earthquake Dynamic Triggering in Fluid Regions. **Zheng, Y.**	Three-Dimensional Local Infrasound Simulation Capability with In Situ Atmospheric Measurements. **Kim, K.**, Rodgers, A., Seastrand, D.	Short Period Surface-Wave Tomography in Central and Eastern US. **Herrmann, R. B.**, Ammon, C. J., Benz, H. M., Xia, Y.
5:30 P.M.	What Water Pressure is Needed to Trigger Earthquakes? **Mori, J.**	Applying a Revised Attenuation Versus Distance Stratospheric Wind Correction to Infrasound Data. **Hertzog, J. T.**, Brogan, R., Clauter, D. A.	Using Discrete Wavelet Transforms to Discriminate Between Noise and Phases in Seismic Waveforms. **Ray, J.**, Hansen, C., Forrest, R., Young, C. J.
5:45–6:30 P.M.	Pint and Poster		
6:30–7:30 P.M.	Ignite Talks Plenary		
7:30–9 P.M.	Student Reception and Early Career Reception		

Tuesday, 18 April (*continued*)

Poster Sessions

Earthquake Source Parameters: Theory, Observations and Interpretations.

1. Invited: Ambient Noise Moment Tensor (ANMT) Estimation. **Dreger, D. S.**, Lindsey, N.
2. Student: Estimating the Magnitude of Laboratory-Generated Seismic Events Using a Ball Drop Empirical Green's Function (EGF) Method. McLaskey, G. C., **Wu, B. S.**
3. Student: Multichannel Deconvolution for Earthquake Apparent Source-Time Functions. **Plourde, A. P.**, Bostock, M. G.
4. Estimating Lg Wave Source Time Functions with Multiple Green's Function Events. **Gallegos, A. C.**, Xie, J.
5. Student: Diverse Seismic Signals Associated with the Sinkhole at Napoleonville Salt Dome, Louisiana. **Nayak, A.**, Dreger, D. S.
6. Student: Towards Automated Estimates of Directivity and Related Source Properties of Small to Moderate Earthquakes with Second Seismic Moments. **Meng, H.**, Ben-Zion, Y., McGuire, J.
7. Uncertainties in Spectral Models from Empirical Green's Function Analyses. **Van Houtte, C.**, Denolle, M.
8. An Alternate Noise Parameterization for Moment Tensor Estimation. **Baker, B.**, Stachnik, J.
9. Automated Estimation of Rupture Directivity in Small to Moderate Earthquakes. **Ross, Z. E.**, Ben-Zion, Y.
10. Seismic Moment Tensor Catalogue for the Central Mediterranean Area. **D'Amico, S.**
11. Student: Constraining Earthquakes Source Properties Using Depth Phases. **Florez, M. A.**, Prieto, G. A.
12. Source Inversion Using Regional and Teleseismic Data: Using a Multi-Objective Optimization to Constrain the Source of the M5.4 2016 September 12 South Korea Earthquake.. **Letort, J.**, Guilhem Trilla, A., Ford, S., Myers, S. C.
13. The 2016 Gr[WITHDRAWN]Earthquake Swarm. **Brumbaugh, D. S.**
14. Source Mechanisms of Induced Earthquakes In The Geysers Geothermal Reservoir. **Yu, C.**, Vavryčuk, V., Admová, P., Kwiatek, G., Bohnhoff, M.
15. Investigation of Source Parameters of the Gyeongju Earthquake Sequence of 2016. **Sheen, D. H.**, Rhee, H. M.
16. Source Parameter Validations Using Multiple-Scale Approaches for Earthquake Sequences in Oklahoma: Implications for Earthquake Triggering Processes. **Chen, X.**, Abercrombie, R. E.
17. Insights into Volcanic Processes in the East Africa Rift Using Small, Temporary Seismic Networks. **Patlan, E.**, Velasco, A. A., Wamalwa, A., Kaip, G.
18. Student: Analysis of the 30 July 1972 MW 7.6 Sitka Earthquake Aftershock Sequence. **Ochoa-Chavez, J. A.**, Doser, D.
19. Student: Moderate Sized Events (3 Mw 5.4–5.6) and Aftershock Relocations of the 2016-2017 Nine Mile Ranch Earthquake Sequence near Hawthorne, Nevada. **Hatch, R. L.**, Smith, K. D., Abercrombie, R. E., Ruhl, C.
20. Student: Variations in Earthquake Source Properties along a Developing Transform Plate Boundary. **Neely, J. S.**, Huang, Y., Furlong, K. P.
21. A Comparison of Different Methods of Calculating Source Spectra and Stress Drop in Southern California. **Abercrombie, R. E.**, Shearer, P. M., Trugman, D. T.
22. Source Spectra and Magnitude Scaling of Induced Earthquakes in Oklahoma and Kansas. **White, I.**, Withers, K., Moschetti, M., Choy, G.
23. A Local Magnitude Formula for Western Canada Sedimentary Basin. **Yenier, E.**
24. ML-Mw Magnitude Relationship: Western Alberta Case Study. **Yenier, E.**, Baturan, D.

Integrated and Geophysical Investigations for Site Characterization of Critical Facilities and Infrastructure.

25. Fault-Zone Exploration in Highly Urbanized Settings Using Guided Waves: An Example from the Raymond Fault, Los Angeles, California. **Catchings, R. D.**, Hernandez, J. L., Sickler, R. R., Goldman, M. R., Chan, J. H., Criley, C. J.
26. Student: Characterization of Earthquake Site Amplification in Alberta, Canada, for Induced-Seismicity ShakeMap Applications. **Farrugia, J. J.**, Molnar, S. E., Atkinson, G. M.
27. Estimation of Kappa for Gyeongju Area in South Korea and Kappa Scaling Factors for NGA-West2 Ground Motion Prediction Equations. **Park, S. J.**, Lee, J. M., Baag, C. E., Choi, H., Noh, M.
28. Student: Shear-Wave Velocity Analysis by Surface Wave Methods in the Boston Area. **Liu, S.**, Ebel, J. E., Urzua, A., Murphy, V.
29. Comparing Earthquake-Based P-Wave and Traditional Array-Based Methods for Obtaining VS30. **Herrick, J.**, Hosseini, M., Yong, A.
30. Student: Comparison of Site Dominant Frequency from Earthquake and Microseismic Data in California. **Hassani, B.**, Yong, A., Atkinson, G. M., Feng, T., Meng, L.
31. Rayleigh-Wave Phase Velocity (VR40) based VS30 Estimates. **Yong, A.**, Martin, A., Albarello, D.
32. Site Response Assessment in Two Geological Contexts, France. **Cauchie, L.**, Cushing, E. M., Gelis, C., Froment, B., Provost, L., Jomard, H.
33. Detection of Underwater Seismic Sources with T-wave Signals and Array Analysis. **Chang, E. T.**
34. Soil Effects in the City of Lorca (SE Spain) and Damage Distribution of the M 5.2 11 May 2011 Earthquake. **Jimenez, M. J.**, Albarello, D., Garcia-Fernandez, M., Massini, F., Lunedei, E.
35. Student: On the Bayesian Inference of Shear Wave Velocity Structure from Horizontal-To-Vertical Spectral Ratio. **Rahpeyma, S.**, Halldorsson, B., Hrafnkelsson, B., Polat, O.
36. Using Routine Multi-Method Shear-Wave Velocity Data (Vs30) as a First Approximation of Seismic Hazard Site Characterization. **Odum, J. K.**, Stephenson, W. J., Williams, R. A., Volti, T.
37. Student: The Role of Non-Invasive Ambient Noise Analysis in Improving Seismic Microzonation Mapping in Vancouver, British Columbia, Canada. **Jackson, F. A.**, Molnar, S. E.
38. Student: A Study of Vertical to Horizontal Ratio of Earthquake Components in the Gulf Coast Region. **Haji-Soltani, A.**, Pezeshk, S., Zandieh, A., Malekmohammadi, M.
39. Student: Estimation of the Site Amplification in the New Madrid Seismic Zone Using Regional and Local Earthquake Data. **Yarahmadi, A.**, Pezeshk, S.
40. Results of Six-Degree-of-Freedom Recording at The Geysers, California: True Backazimuth, Phase Velocity, and Site Characterization. **Malek, J.**, Brokesova, J.
41. Reducing Uncertainties in the Estimation of Deep VS Profiles at the Location of CERI Stations, Using Joint
42. Inversion of Earthquake Receiver Functions and Site-Specific Geophysical Phase Velocity Dispersion Curves. **Hosseini, M.**, Somerville, P. G., Skarlatoudis, A., Bayless, J., Thio, H. K.
43. Seismic and Liquefaction Hazard Mapping and Early Earthquake Warning in West Tennessee. **Cramer, C.H.**, Van Arsdale, R.B., Arellano, D., Pezeshk, S., Horton, S.P., Bolarinwa, O.
44. Comparison of Earthquake Damage Patterns and Shallow-Depth vs Structure across the Napa Valley, Inferred from Multichannel Analysis of Surface Waves (MASW) and Multichannel Analysis of Love Waves (MALW) Modeling of Basin-Wide Seismic Profiles. **Chan, J. H.**, Catchings, R. D., Strayer, L. M., Goldman, M. R., Criley, C. J., Sickler, R. R., Boatwright, J.
45. Student: Geophysical Investigations for Site Characterization at Unstable Sea Cliffs: Case Study of Selmun (Malta). **D'Amico, S.**, Iannucci, R., Martino, S., Paciello, A., Farrugia, D., Galea, P., Panzera, F.
46. Student: High-Resolution Tomography of Vp, Vs, Vp/Vs, and Poisson's Ratios of Quaternary-Active Chabot Fault of the Hayward Fault Zone. **McEvilly, A. T.**, Strayer, L. M., Chan, J. H., Abimbola, A.
47. Student: Shallow vs Structure of Subsidiary Faults in the Hayward Fault Zone Inferred from Multichannel Analysis of Surface Waves (MASW). **Richardson, I. S.**, Strayer, L. M., Chan, J. H., McEvilly, A. T.
48. A Dual-Approach Analysis of Lg Wave Site Amplification Using Site Response Ratios. **Xie, J.**, Chen, Y., Gellagos, A., Hardy, S.
49. Student: Topographic Influence on Near-Surface Seismic Velocity in Southern California. **Lin, J. C.**,

The Subduction Zone Observatory.

50. Live Tsunami Warning System. **Hayashi, M.**, Schirling, P., Honda, A.
51. Reevaluating the Tsunamigenic Potential of Shallow Subduction Zones from Probabilistic Megathrust Earthquake Source Models. **Jiang, J.**, Simons, M., Duputel, Z.
52. Slab2—Updated Subduction Zone Geometries and Modeling Tools. **Moore, G. L.**, Hayes, G. P., Portner, D. E., Furtney, M., Flamme, H. E., Hearne, M.
53. Student: Catalog of Near-Shore Seismicity in the Pacific Northwest from Cascadia Initiative OBS Data. **Stone, I.**, Vidale, J.
54. Student: Using Earthquake Body Wave Travel Times to Explore Upper Plate Structure along the Washington Forearc. **Myers, E. K.**, Roland, E. C.
55. Student: Cascadia Seismogenic Zone Seismicity as Detected by the Cascadia Initiative Amphibious Data. **Morton, E. A.**, Bilek, S. L., Rowe, C. A.
56. High-Resolution 3D Seismic Imaging of Reflectors above the Subducting Slabs and Slab-Mantle Interaction. **Zheng, Y.**, Li, L., Li, X., Hu, H.
57. Refine Fault Geometry with Broadband Waveform Modeling for Earthquake Source Parameters: Case Studies in Nepal and Sumatran Subduction Zones. **Wei, S. W.**, Wang, X., Wu, W. B.
58. Student: Mantle Serpentinization near the Mariana Trench Constrained by Ocean Bottom Surface Wave Observations. **Cai, C.**, Wiens, D. A., Lizarralde, D., Eimer, M.
59. A Review of the Complex Geometry of Cocos Slab under North America. **Pérez-Campos, X.**, Clayton, R. W., Rodríguez-Domínguez, M. A., Valenzuela, R., Husker, R., Iglesias, A., Singh, S. K.
60. Prediction of Ground Motion from Megathrust Earthquake Using the Ambient Seismic Field. **Viens, L.**, Denolle, M., Miyake, H.

Numerical Modeling of Earthquake Ground Motion, Rupture Dynamics and Seismic Wave Propagation.

61. Three-Dimensional High-Performance Computing Simulations of Near-Fault Earthquake Ground Motions for Engineering Applications: Large Generic Events and Scenarios in the San Francisco Bay Area. **Rodgers, A. J.**, Pitarka, A., Petersson, N. A.

Tuesday, 18 April (*continued*)

62. Performance of the Source Physics Experiment (SPE) Geological Framework Velocity Model with Stochastic Heterogeneity in Modeling SPE-6 Far-Field Waveforms. **Pitarka, A.**, Chiang, A., Wagoner, J., Ezzedine, S., Vorobiev, O., Walter, W.
63. STUDENT: Modeling Earthquakes and Source Physics Experiment Broadband Recordings at Regional Distances: Effects of Multiple Basins. **Dunn, M.**, Louie, J., Smith, K. D., Pitarka, A.
64. Modeling Topographic Effects and Site Response for Strong Ground Motions at Los Alamos National Laboratory, New Mexico.. **Larmat, C. S.**, Lee, R. C.
65. STUDENT: A Vs30-Dependent Sediment Velocity Model for High-Frequency Simulated Ground Motions in the Los Angeles Basin. **Shi, J.**, Asimaki, D.
66. Simulation on Strong Ground Motion of Xiaojiang Fault Zone. **Chen, X. L.**, Guo, J. P., Gao, M. T., Li, Z. C., Li, T. F.
67. STUDENT: Sedimentary Basin Amplification in the Puget Sound and Willamette Valley Regions: Observations from Local Earthquakes and 3D Simulations. **Thompson, M.**, Frankel, A. D., Vidale, J. E., Wirth, E. A.
68. STUDENT: Exploring the Implementation of an Equivalent Linear Method in 3D to Approximate Nonlinear Response in Regional Ground Motion Simulation. **Khoshnevis, N.**, Taborda, R.
69. 3D Dynamic Rupture Simulations along the Wasatch Fault, Utah, Incorporating Rough-Fault Topography. **Withers, K. B.**, Moschetti, M.
70. Ground Motion Variability and the Modeling of the Source of the 2011 Mw 5.2 Lorca Earthquake, SE Spain. Moratto, L., Saraò, A., Vuan, A., Mucciarelli, M., Jimenez, M. J., **Garcia-Fernandez, M.**
71. How to Anticipate Future Earthquake Characteristics on a Multi-Segmented Fault? A Practical Example of Dynamic Rupture Modeling to Evaluate the Maximum Magnitude. Durand, V., **Hok, S.**, Boiselet, A., Bernard, P., Scotti, O.
72. The SCEC Broadband Platform: Open-Source Software for Strong Ground Motion Simulation and Validation. **Silva, F.**, Goulet, C. A., Maechling, P. J., Callaghan, S., Jordan, T. H.
73. A Ground-Motion Prediction Equation for California Constructed Using an Artificial Neural Network. **Aagaard, B. T.**
74. Accurate and Efficient Viscoelastic Finite-Difference Simulations in Realistic Media with Material Discontinuities: The Method and Application to the Mygdonian Basin. **Kristek, J.**, Moczo, P., Kristekova, M., Chaljub, E.
75. STUDENT: Kinematic Rupture Generator Based on 3D Rough Fault Dynamic Rupture Simulations. **Savran, W. H.**, Olsen, K. B., Day, S. M.
76. STUDENT: Multicycle Dynamics of a 3D Strike-Slip Fault System with Bends. **Liu, D.**, Duan, B.
77. STUDENT: Earthquake Cycle Simulations with Rate-and-State Friction and Nonlinear Viscoelasticity. **Allison, K. L.**, Dunham, E. M.

Forecasting Aftershock Sequences in the Real World.

78. Real-Time Completeness of the USGS ComCat Earthquake Catalog and Implications for Operational Aftershock Forecasting. **Hardebeck, J. L.**, Llenos, A. L., Michael, A. J., Page, M. T., van der Elst, N.

Paleoseismology of Subduction Earthquake Cycles.

79. Late Holocene Paleoseismology of Shuyak Island, Surface Deformation and Plate Segmentation within the 1964 Alaska M 9.2 Earthquake Rupture Zone. **Shennan, I.**, Brader, M. D., Barlow, N. L. M., Davies, F. P., Longley, C., Tunstall, N.
80. Observations on the Distributions of Modern Benthic Diatoms to Improve Estimates of Past Coseismic Land-Level Changes, Humboldt Bay, California. **Hemphill-Haley, E.**
81. Evidence for Great Earthquakes of Variable Rupture Mode beneath Marshes of the Nehalem Estuary, Central Cascadia Subduction Zone. **Nelson, A. R.**, Sawai, Y., Hawkes, A., Engelhart, S. E., Witter, R. C., Bradley, L. A., Dura, T., Horton, B. P., Duross, C. B.
82. Possible Structural Evidence for Heterogeneous Plate Coupling and Linkages to Geodesy and Paleoseismology, Cascadia Margin, USA. **Goldfinger, C.**, Kane, T.
83. Possible Sedimentary Evidence for Paleoearthquakes along the Northern Lesser Antilles: Preliminary Results from CASEIS16. Feuillet, N., Beck, C., Cattaneo, A., Goldfinger, C., Guyard, H., Morena, P., Moreno, E., **Patton, J. R.**, Ratzov, G., Seibert, C., St-Onge, G., Woerther, P., Beauvais, Q., Bênatre, G., Bieber, A., Bouchet, O., Caron, B., Caron, M., Casse, M., Cavailhes, Del Manzo, G., Deschamps, C. E., Desiage, P. A., Duboc, Q., Fauquembergue, K., Ferrand, A., Hausmann, R., Jacques, E., Johannes, L., Laurencin, M., Leclerc, F., Leclerc, P., Monteil, C., Saurel, J. M.

Computational Infrastructure and Data for Enhancing Earthquake Science.

84. UCVM: From Supercomputers to Laptops, Querying and Visualizing 3D Seismic Velocity Models. **Gill, D. J.**, Maechling, P. J., Jordan, T. H., Shaw, J. H., Plesch, A., Lee, E., Chen, P., Goulet, C. A., Taborda, R., Olsen, K. B., Callaghan, S.
85. STUDENT: Testing the Density of Seismic Networks with ShakeMap. **Hu, Z.**, Olsen, K. B.
86. Web-Based Database of Active and Passive Surface Wave Investigation Results for Site Classification. **Hayashi, K.**
87. STUDENT: A Detailed Automatic Seismicity Catalog (1998-2015) for the San Jacinto Fault Zone Region. **White, M.**, Ross, Z. E., Vernon, F. L., Ben-Zion, Y.

Novel Approaches to Understanding Active Volcanoes.

88. Investigating the Relationship Between Deep Long-Period and Deep High Frequency Seismicity at Mammoth Mountain, California, 2012 – 2014. **Hotovec-Ellis, A. J.**, Shelly, D. R., Hill, D. P., Pitt, A. M., Dawson, P. B., Chouet, B. A.
89. Monitoring of Oregon and Washington Cascade Volcanoes: In a Time of Quiescence. **Darold, A.**, Pauk, B., Thelen, W., Kramer, R.
90. Searching for Correlations between Seismicity and Volcanic Eruptions for Improved Eruption Forecasting. **Pesicek, J. D.**, Ogburn, S., Wellik, J.
91. Hydroacoustic Observations of Recent Submarine Eruptions at Ahyi and Bogoslof Volcanoes. **Haney, M. M.**, Tepp, G., Lyons, J., Bohnenstiehl, D., Chadwick, B., Dziak, B., Fee, D., Searcy, C.
92. STUDENT: Seismic Investigation of a Lava Delta Collapse at Kilauea Volcano, Hawai'i. **Shiro, B. R.**, Burgess, M. K., Thelen, W. A.
93. STUDENT: Analysis of the Seismicity Occurred in the Volcano of San Miguel in the Years 2013 and 2014. **García Castro, R. A.**, Marroquín, M. G., Gómez, N. E.
94. KivuSNet: A Broadband Seismic Network for the Lake Kivu & Virunga Volcanic Region, Democratic Republic of the Congo. **Oth, A.**, Barrière, J., d'Oreye, N., Mavonga, G., Subira, J., Mashagiro, N., Kafudu, B., Fiama, S., Celli, G., Bigirande, J.d.D, Ntenge, A.J., Habonimana, L., Bakundukize, C., Kervyn, F.
95. Diverse Long Period Tremors and Their Implication on Degassing and Heating inside Aso Volcano. **Niu, J.**, Song, T. R.
96. STUDENT: Analysis of Deep Long-Period Seismicity from a Subglacial Volcano in Marie Byrd Land, Antarctica. **McMahon, N. D.**, Aster, R. C., Myers, E. K., Lough, A. C.

Geoacoustics: Infrasound and Beyond.

97. Dispersed Acoustic Waves: Implications for Atmospheric Inversion and Source Location. **Bowman, D. C.**, Arrowsmith, S. J.
98. The Acoustic Signature of Underground Chemical Explosions during the Source Physics Experiment. **Bowman, D. C.**, Preston, L., Waxler, R., Whitaker, R., Jones, K. R., Albert, S.
99. Acoustic Yield Estimation Using Full Waveforms. **Arrowsmith, S.J.**, Bowman, D.C., Gramann, M.
100. Combining Seismic and Acoustic Event Catalogs to Better Understand the Nature of Individual Events. **Albert, S.**, Arrowsmith, S. J.
101. Improved Nearfield Dispersion Measurements from Analytic Representation of Time-Warped Acoustic Modes. **Ball, J. S.**

Earthquake Interaction and Triggering: From Near Field to Far Field, From Natural to Induced.

102. STUDENT: Enhanced Dynamic Triggering in Waste-Water Injection Sites near Woodward, Oklahoma. **Qin, Y.**, Chen, X., Peng, Z., Aiken, C.
103. STUDENT: Triggering Mechanisms in Large Iranian Earthquake Sequences from Calibrated Relocations. **Karasozen, E.**, Nissen, E., Bergman, E. A., Ghods, A.
104. STUDENT: Long-Term Seismic Behavior around the Epicenter of the 2008 Mw7.9 Wenchuan Earthquake. **Yao, D.**, Peng, Z., Ruan, X., Long, F., Su, J., Liu, X., Zhang, C.
105. STUDENT: Possible Activation of Splay Faults During the 2006 Java Tsunami Earthquake. **Fan, W.**, Bassett, D., Shearer, P. M., Ji, C., Denolle, M.
106. Induced Intraplate Earthquakes in Colorado from Extreme Seismic Waves from the End-Cretaceous Asteroid Impact. **Sleep, N. H.**, Olds, P.
107. STUDENT: Numerical Investigation of Interactions between Dynamic Stress and Pore Fluids in Earthquake Triggering. **Walker, R. L.**, Jha, B., Aminzadeh, F.
108. STUDENT: Seismicity in the Mineral Mountains, Utah and the Possible Association with the Roosevelt Hot Springs Geothermal System. **Potter, S.**, Pankow, K., Moore, J., Allis, R.
109. STUDENT: InSAR MSBAS Time-Series Analysis of Induced Seismicity in Colorado and Oklahoma. **Barba, M.**, Tiampo, K. F., Samsonov, S., Feng, W.
110. STUDENT: Temporal Changes in Seismicity and Seismic Velocities in Salton Sea Geothermal Field. **Li, C.**, Peng, Z., Zhang, C., Yao, D., Meng, X.

Advances in Earthquake Early Warning.

111. STUDENT: Earthquake Early Warning Feasibility Study for the New Madrid Seismic Zone. **Ogweno, L. P.**, Withers, M. M., Cramer, C. H.
112. Earthquake Early Warning System for Schools in the Campania Region, Southern Italy. **Emolo, A.**, Picozzi, M., Festa, G., Zollo, A., Martino, C., Elia, L.
113. Analysis of Ambient Pre-Seismic Noise for Short-Term Advance Warning of Large Earthquakes. **Gupta, I. N.**, Wagner, R. A.
114. Reducing Alert Times for ShakeAlert's ElarmS Earthquake Early Warning Algorithm. **Terra, F.**, Hellweg, M., Allen, R. M., Chung, A. I., Strauss, J. A., Hensen, I. H., Neuhauser , D. S.
115. Evaluating the Geodetic Alarm System (G-larmS) Performance Using Synthetic Earthquakes. **Ruhl, C. J.**, Melgar, D., Grapenthin, R., Aranha, M., Allen, R. M.

Tuesday, 18 April (*continued*)

Varied Modes of Fault Slip and their Interactions - Slow Earthquakes, Creep to Mega Quakes.

116. Breaking Down Large Slow Slip into a Cascade of Aseismic Transients. **Frank, W. B.**, Rousset, B., Lasserre, C., Campillo, M.
117. STUDENT: Tremor Modulation by Dynamic Stresses from Teleseismic Earthquakes in the Alaska-Aleutian Subduction Zone. **Li, B.**, Ghosh, A.
118. Coming up from the Deep? Seismological Evidence of Changing Slip-Regimes with Depth on the Alpine Fault, New Zealand.. **Chamberlain, C. J.**, Boese, C. M., Baratin, L., Townend, J.
119. Mixed Seismic/Aseismic Slip Transient in a Seismic Gap Region Revealed by Dense Geodetic Measurements: the 2011-2014 Pollino (Southern Italy) Earthquake Swarm. Cheloni, D., **D'Agostino, N.**, Selvaggi, G., Avallone, A., Fornaro, G., Giuliani, R., Reale, D., Sansosti, E., Tizzani, P.
120. Observing Episodic Tremor and Slip and Slow Slip Events in the GAGE Geodetic Networks. **Puskas, C. M.**, Hodgkinson, K., Phillips, D. A., Meertens, C. M.
121. Tremor and Slow Slip in an Antarctic Ice Stream. **Lipovsky, B. P.**, Dunham, E. M.

Seismology Software Tools That Improve What We Do and How We Do It.

122. INVITED: Seismology and GIS: USGS Near Real-Time Significant Earthquake and Earthquake Scenario GIS Feeds. **Smoczyk, G. M.**, Wald, D. J., Worden, C. B., Thompson, E. M., Quitoriano, V., Hearne, M. G.
123. Integrated Research, Development, and Operations of USGS Real-Time Earthquake Shaking and Impact Information Systems. **WITHDRAWN** **ld, D. J.**, Allstadt, K., Hayes, G., Hearne, M., Jaiswal, K., Marano, K., Quitoriano, V., Thompson, E. M., Worden, C. B.
124. ISC-EHB: Reconstruction of the EHB Earthquake Database. **Engdahl, E. R.**, Weston, J., Harris, J., Di Giacomo, D., Storchak, D.
125. INVITED: ShakeMap 4.0. **Worden, C. B.**, Thompson, E. M., Hearne, M. G., Luco, N., Wald, D. J.
126. Products and Services Available from the Southern California Earthquake Data Center (SCEDC) and the Southern California Seismic Network (SCSN). **Yu, E.**, Acharya, P., Bhaskaran, A., Chen, S., Andrews, J., Hauksson, E., Clayton, R. W.
127. INVITED: Earthquake-Detection-Formats and HazDev-Broker: Standards for Formatting and Distributing Seismic Detection Data Using Open Source Software. **Patton, J. M.**, Guy, M. R.
128. EQcorrscan: Open-Source Python Package for Detection and Analysis of Near-Repeating Seismicity. **Chamberlain, C. J.**, Hopp, C., Warren-Smith, E., Baratin, L., Townend, J.
129. INVITED: Advanced Data Selection for Research Ready Data Sets. **Bahavar, M.**, Trabant, C., Van Fossen, M., Weertman, B., Ahern, T.

To Tweet or Not To Tweet: Effective Use of Social Media for Citizen Science and Science Communication.

130. Tweet-Based Earthquake Detections and Impact Assessment Integrated with Traditional Seismic Processing. **Guy, M.**, Earle, P., Turner, J., Allen, J.
131. Using Social Networks for Enhancing Outreach at the National Seismological Network of Costa Rica. **Linkimer, L.**, Carvajal, S.
132. South Napa in 140 Characters or Less: Earthquake Response via Twitter. **Lozos, J. C.**

Closing the Gap Between Laboratory-Based Damping Models and Observed Attenuation of Seismic Waves in the Field.

133. Estimation of Site-Specific Kappa (κ_0)-Consistent Damping Values at Selected Stations from the KiK-net Database. **Cabas, A.**, Rodriguez-Marek, A., Bonilla, L. F.
134. STUDENT: Utilizing California Vertical Array Data to Study Methods for Estimation of Small-Strain Damping in 1D Ground Response Analysis. **Afshari, K.**, Stewart, J. P.
135. Investigating the Low-Strain Dynamic Properties of Late-Glacial Silts and Clays in the Lab and the Field. **Crow, H. L.**, Cascante, G., Irfan, M., Khan, Z., Leboeuf, D., Sivathayalan, S., Motazedian, D.
136. The Contribution of Scattering to Near-Surface Attenuation. **Pilz, M.**, Fäh, D.
137. Exploration of Kappa Using 2D Numerical Simulation of Wave Propagation. Bonilla, L. F., **Gelis, C.**
138. Physical Consistency of Seismic Q for near Surface. **Morozov, I. B.**
139. High Frequency Attenuation of Regional Phases and Applications to Event Discrimination. **Pyle, M. L.**, Walter, W. R., Pasyanos, M. E.
140. A Comparison of Frequency-Dependent Attenuation in the Piedmont and Coastal Plain of the Southeastern US. **Chapman, M. C.**, Wu, Q.

Theoretical and Practical Advances in Ambient Noise and Coda Studies.

141. Special Noise Field Characteristics of a Small Aperture Seismic Array on the Southeast Coast of China. **Hao, C. Y.**
142. STUDENT: Rayleigh Wave Ellipticity and Anisotropy from Ambient Noise Cross-Correlations in Southern California. **Berg, E. M.**, Lin, F. C., Allam, A. A.
143. STUDENT: A New Method to Determine Coda-Q, Magnitude of Earthquakes and Site Amplification. **Wang, W.**, Shearer, P.

Wednesday, 19 April—Oral Sessions

Presenting author is indicated in bold.

Time	*Plaza Ballroom D*	*Plaza Ballroom E*	*Plaza Ballroom F*	*Governor's Square 14*
	Fine Scale Structure of the Crust and Upper Mantle Session Chairs: Peter Molnar, Barbara Romanowicz, Steven Roecker	**Observations and Mechanisms of Anthropogenically Induced Seismicity** Session Chairs: Thomas Goebel, Thomas Braun, Ivan Wong, Justin Rubinstein	**Source Discovery Using Differential Methods: Applications to Explosion Monitoring** Session Chairs: William Walter, Joshua Carmichael, Steven Gibbons	**Regional Variations in Seismological Characteristics: Implications for Seismic Hazard Analysis** Session Chairs: Sanjay Bora, Adrian Rodriguez-Marek, Marco Pagani
8:30 A.M.	Imaging the Farallon Slab and Other Upper-Mantle Structure under USArray Using Long-period Reflection Seismology. Buehler, J. S., **Shearer, P. M.**	STUDENT: Imaging the Pore-Pressure Diffusion and Triggering Front of Induced Seismicity in Guy-Greenbrier, Arkansas, by Mapping the Seismic B-Value. **Mousavi, S. M.**, Ogwari, P. O., Horton, S. P.	Surface Disturbances at the Punggye-ri Nuclear Test Site: Another Indicator of Nuclear Testing? **Pabian, F.**, Coblentz, D.	INVITED: Regional Path and Site Effects in Ground Motion Models. **Stewart, J. P.**, Boore, D. M., Kishida, T., Parker, G. A., Seyhan, E., Zimmaro, P.
8:45 A.M.	INVITED: GLImER—A New Database of Teleseismic Receiver Functions for Global Imaging of Crustal and Upper Mantle Structure. **Rondenay, S.**, Spieker, K., Sawade, L., Farestveit, M., Drottning, A., Halpaap, F.	Testing the Quantitative Aftershock Productivity Forecast in Mining-Induced Seismicity. **Kozlowska, M.**, Orlecka-Sikora, B.	Absolute Locations of the North Korean Nuclear Tests Based on Differential Seismic Travel Times and InSAR. **Myers, S. C.**, Ford, S. R., Mellors, R., Ichinose, G.	
9 A.M.	INVITED: Constraining Fine Scale Lithospheric Structures by Full Waveform Inversion of Teleseismic Waves. **Chevrot, S.**	The 2016 Mw5.1 Fairview, Oklahoma Earthquakes: Evidence for Long-Range Poroelastic Triggering at >40 km from Fluid Disposal Wells. **Goebel, T. H. W.**, Weingarten, M., Chen, X., Haffener, J., Brodsky, E. E.	INVITED: Seismo-Acoustic Analyses of the DPRK Underground Nuclear Tests for the Estimation of Source Depth. **Assink, J. D.**, Averbuch, G., Smets, P. S. M., Evers, L. G.	STUDENT: Recommended Central and Eastern North America Seismic Site Amplification Models for USGS Map Applications. **Parker, G. A.,** Stewart, J. P., Harmon, J. A., Hashash, Y. M. A., Atkinson, G. M., Boore, D. M., Bozorgnia, Y., Darragh, R., Silva, W. J.
9:15 A.M.	INVITED: Tectosphere from Receiver Functions. **Vinnik, L. P.**	The Role of Pre-Injection Pore Fluid Pressure in Susceptibility to Induced Seismicity. **Levandowski, W.**, Weingarten, M., Walsh, F. R.	INVITED: Discrimination, Relocation, Magnitude Calculation and Yield Estimation of the North Korean Nuclear Tests. **Zhao, L. F.**, XIE, X. B., Wang, W. M., Fan, N., Hao, J. L., Zhao, X., Yao, Z. X.	Investigating Physical Explanations for Path Effects to Reduce Uncertainty in Ground Motion Prediction Equations. **Sahakian, V. J.**, Baltay, A. S., Hanks, T. C., Buehler, J. S., Kilb, D., Vernon, F. L.

Time	*Governor's Square 15*	*Governor's Square 16*	*Governor's Square 12*
	From Field Site to Data Center: Network Innovations for Earthquake Early Warning Session Chairs: Christopher Bruton, Rayo Bhadha	**Earthquake Rapid Response** Session Chairs: Anne Meltzer, Jay Pulliam, Dan McNamara	**Overcoming Challenges in Seismic Risk Communication** Session Chairs: Sean McGowan, Taojun Liu
8:30 A.M.	Borehole Instrumentation for Strong Ground Motion Monitoring at Swiss Nuclear Power Plant Sites. **Dalguer, L. A.**, Renault, P., Skolnik, D.	INVITED: Some Reflections on Aftershock Deployments in Distant Lands. **Hough, S. E.**	The Public Can Understand Risk and Cares about Building-Code Requirements for New Buildings. **Porter, K. A.**, Jones, L. M.
8:45 A.M.	INVITED: The Southern California Seismic Network, a Multi-Purpose Seismic Observatory. **Alvarez, M.**, Thomas, V., De Cristofaro, J., Hauksson, E., Bhadha, R., Stubailo, I., Bruton, C., Watkins, M.	INVITED: Complex Extensional Faulting and Stress Interactions in the Central Apennine Cluster: The 2016 Amatrice, Visso and Norcia, Italy, Earthquakes. **Melgar, D.**, Xu, X., Ruhl, C. J., Malagnini, L., Menichetti, M., Burgmann, R.	Human and Economic Losses for Earthquake Scenarios along the Himalayan Arc. Francis, J., **Wald, D. J.**, Briggs, R., Hayes, G., Hearne, M., Thompson, E. M., Allstadt, K., Jaiswal, K.
9 A.M.	INVITED: UC Berkeley Network Operational Improvements and Challenges for Earthquake Early Warning. **Neuhauser, D. S.**, BSL Operations Staff, UC Berkeley, Berkeley, CA, USA	Efficient Characterization of Subduction Zone Segmentation, Rupture Regions, and Seismic Structure: Examples from Large Magnitude Chile Earthquakes since 2010. **Russo, R. M.**, Roecker, S. W., Comte, D.	Seismology Meets Theology: Advancing Earthquake Hazard Mitigation by Engaging Pakistan's Religious Community. **Hamburger, M. W.**, Hussain, A., Kakar, D. M., Lodi, S. H., Rafi, M. M., Tucker, B. E.
9:15 A.M.	INVITED: Reducing Digitiser Latency for Earthquake Early Warning: New Strategies for Seismic Hardware. Hicks, S. P., **Allardice, S.**, Hill, P., McGowan, M.	Subduction Zone Earthquake Rupture and Aftershock Sequences: Insights from the April 2016 Pedernales Earthquake, Ecuador. **Meltzer, A.**, Beck, S., Alvarado, A., Chambers, M., Charvis, P., Font, Y., Hernandez, S., Lynner, C., Regnier, M., Rietbrock, A., Ruiz, M., Soto Cordero, L., Sirait, A., Stachnik, J., Yepes, H.	School Seismic Safety Projects in Washington State, USA: A Critical Effort for Earthquake Resilient Washington. **Cakir, R.**, Walsh, T. J., Norman, D. K.

Wednesday 19 April (*continued*)

Time	*Plaza Ballroom D*	*Plaza Ballroom E*	*Plaza Ballroom F*	*Governor's Square 14*
	Fine Scale Structure of the Crust and Upper Mantle	**Observations and Mechanisms of Anthropogenically...**	**Source Discovery Using Differential Methods...**	**Regional Variations in Seismological Characteristics...**
9:30 A.M.	INVITED: Tectosphere from Receiver Functions. **Vinnik, L. P.** (continued).	INVITED: Observations of Fault Zone Hydrogeologic Architecture. **Xue, L.**, Brodsky, E. E., Fulton, P. M., Allègre, V., Parker, B. L., Cherry, J. A.	INVITED: Mb-Ms for the DPRK Announced Nuclear Tests. **Selby, N. D.**	Regional Fourier Amplitude Spectra Ground Motion Models Quantifying Source, Path and Site Contributions to Ground Motion in Canterbury and Central New Zealand. **Kaiser, A. E.**, Oth, A., Benites, R. A., Van Houtte, C.
9:45–10:45 A.M.	Posters and Break			
	Fine Scale Structure of the Crust and Upper Mantle (continued)	**Observations and Mechanisms of Anthropogenically Induced Seismicity** (continued)	**Source Discovery Using Differential Methods: Applications to Explosion Monitoring** (continued)	**Regional Variations in Seismological Characteristics: Implications for Seismic Hazard Analysis** (continued)
10:45 A.M.	Lithospheric Structure in Central California across the Isabella Anomaly and Tectonic Implications. **Dougherty, S. L.**, Clayton, R. W., Hansen, S. M., Schmandt, B.	Insight into Subdecimeter Fracturing Processes During Hydraulic Fracture Experiment in Äspö Hard Rock Laboratory, Sweden. **Kwiatek, G.**, Martínez-Garzón, P., Plenkers, K., Leonhardt, M., Arno, Z., Dresen, G., Bohnhoff, M.	Estimating and Exploiting the Outgoing Seismic Wavefield at the North Korean Nuclear Test Site. **Gibbons, S. J.**	STUDENT: Site-Effects Model for Central and Eastern North America Based on Peak Frequency and Average Shear Wave Velocity. **Hassani, B.**, Atkinson, G. M.
11 A.M.	INVITED: Imaging Lithospheric Drips and Delaminations with Large Seismic Arrays. **Levander, A.**	A Macroscopic Study of the Spatio-Temporal Evolution of Induced Seismicity on Single Faults in Oklahoma and Southern Kansas. **Schoenball, M.**, Ellsworth, W. L.	Surface Wave Relative Amplitude and Travel-Time Anomalies from the 2009, 2013 and 2016 DPRK Declared Nuclear Explosions. **Ichinose, G. A.**, Ford, S. R., Myers, S. C., Pasyanos, M. E., Walter, W. R.	Notes on Strong Ground Motions in the 2011 Fukushima-Hamadori Normal-Faulting Earthquakes. **Anderson, J. G.**, Kawase, H.
11:15 A.M.	Preliminary SKS/SKKS Shear Wave Splitting Results for the GRASP Seismic Array in the Dominican Republic. **Vanacore, E. A.**, Serevino, V., Pulliam, J., Huerfano, V., Rivera, E. P.	INVITED: Evaluating Mitigation Strategies for Induced Earthquakes in Light of Recent Moderate Oklahoma Earthquakes. **Yeck, W. L.**, McNamara, D. E., Hayes, G. P., Rubinstein, J. L., Barnhart, W. D., Earle, P. S., Benz, H. M.	The Influence of Topography on Regional P-Wave Observations from the North Korean Underground Nuclear Tests. **Reiter, D. T.**, Yoo, S. H.	NGA-West2 Empirical Fourier and Duration Models for Active Crustal Regions to Generate Regionally Adjustable Response Spectra. **Bora, S. S.**, Cotton, F., Scherbaum, F.

Time	*Governor's Square 15*	*Governor's Square 16*	*Governor's Square 12*
	From Field Site to Data Center: Network Innovations for Earthquake Early Warning	**Earthquake Rapid Response**	**Overcoming Challenges in Seismic Risk Communication**
9:30 A.M.	Data Latency, Compression and Encryption. Steim, J. M., **Franke, M.**, Spassov, E. N.	INVITED: Structure of the Main Himalayan Thrust in Nepal Derived from Aftershocks of the 2015 M7.8 Gorkha Earthquake Recorded by the NAMASTE Rapid Response Seismic Network. **Karplus, M. S.**, Nabelek, J., Pant, M., Kuna, V., Sapkota, S. N., Adhikari, L. B., Velasco, A. A., Ghosh, A., Klemperer, S. L., Mendoza, M.	INVITED: Making Sense of Uncertainty: Risk Communication in the Context of Induced Seismicity. **Campbell, N. M.**, Vickery, J. L., Ritchie, L. A.
9:45–10:45 A.M.	Posters and Break		
	Machine Learning and its Application to Earthquake and Explosion Signal Analysis Session Chairs: Timothy Draelos, Hunter Knox.	**Earthquake Rapid Response** (continued)	**Overcoming Challenges in Seismic Risk Communication** (continued)
10:45 A.M.	STUDENT: On the Use of Machine Learning for Seismic Event Detection. **Bergen, K. J.**, Beroza, G. C.	INVITED: Stranded Slip in the Himalayan Collision Zone and Its Implications for the Seismic Cycle. **Bendick, R.**, Mencin, D., Bilham, R., Burgmann, R.	Getting Ready for Earthquakes and Tsunamis in Puerto Rico: ShakeOut vs Caribe Wave Exercises. **von Hillebrandt-Andrade, C.**, Hincapié-Cárdenas, C., Vanacore, E., Huérfano, V. A., Báez-Sánchez, G., Gómez, G., Benthien, M. L., Wood, M.
11 A.M.	Uncertainty Estimation of Onset Arrival Times Using Parametric Bootstrap of Auto-Regressive Time Series. **Vollmer, C.**, Peterson, M. G., Stracuzzi, D. J.	2015 Mw 7.8 Gorkha Earthquake in Nepal: Imaging of Rupture Complexity and Aftershock Activity Using Global and Local Seismic Network. **Ghosh, A.**, Li, B., Mendoza, M.	
11:15 A.M.	Applying Machine Learning to Predict Failure. Rouet-LeDuc, B., Hulbert, C., Lubbers, N. E., Barros, K. M., **Johnson, P. A.**	INVITED: Expanding Scales of Rapid Seismic Deployments: New Tools and Techniques to Collect and Explore High-Resolution Datasets. **Cochran, E. S.**	Bhutan Earthquake Desks: An Affordable, Interim Method of Improving School Earthquake Safety in Countries with High Seismic Risk and Few Resources. Tshering, K. D., Bowden, T., Bruno, I., Brutter, A., Diwarkar, L., Kianirad, E., O'Donnell, A., Rodgers, J., **Tucker, B.**

Wednesday 19 April (*continued*)

Time	*Plaza Ballroom D*	*Plaza Ballroom E*	*Plaza Ballroom F*	*Governor's Square 14*
	Fine Scale Structure of the Crust and Upper Mantle...	**Observations and Mechanisms of Anthropogenically ...**	**Source Discovery Using Differential Methods...**	**Regional Variations in Seismological Characteristics...**
11:30 A.M.	INVITED: Lithospheric Foundering and Underthrusting Imaged beneath Tibet. **Niu, F.**, Chen, M., Tromp, J., Lenardic, A., Lee, C. T., Cao, W., Ribeiro, J.	Probing Injection-Induced Seismicity in Northern Oklahoma with a Dense Array. **Dougherty, S. L.**, Cochran, E. S., Harrington, R. M.	Constraints on Crustal Heterogeneity and Q(f) from Regional (<4 Hz) Wave Propagation for the 2009 North Korea Nuclear Test. **Olsen, K. B.**, Jacobsen, B. H., Begnaud, M., Phillips, S. W.	INVITED: Implications from Comparison of the Ground Motion Prediction Equation and Global Ground Motion Dataset. **Si, H.**, Koketsu, K., Miyake, H., Ibrahim, R.
11:45 A.M.	INVITED: Plateau Subduction, Intraslab Seismicity and the Denali Volcanic Gap. **Bostock, M. G.**, Chuang, L., Wech, A. G., Plourde, A. P.	Geothermal Induced Seismicity: What Links Source Mechanics and Event Magnitudes to Faulting Regime and Injection Rates? **Martinez-Garzon, P.**, Kwiatek, G., Bohnhoff, M., Dresen, G.	Physical Relations that Quantify the Significance of the Waveform Correlation: Application to the North Korean Explosions. **Carmichael, J. D.**	Reveal the Difference between Ground Motion Models under Correlated Observations. **Mak, S**
Noon–1:30 P.M.	Lunch			
	Fine Scale Structure of the Crust and Upper Mantle (continued)	**Assessment and Management of Hazards from Seismicity Induced by Hydraulic Fracturing** Session Chairs: Gail Atkinson, David Eaton, Ryan Schultz, Honn Kao	**The Mw7.8 Kaikoura Earthquake** Session Chairs: Bill Fry and Matt Gerstenberger	**Earthquake Impacts on the Natural and Built Environment** Session Chairs: Eric Thompson, Kate Allstadt, Kishor Jaiswal, Nilesh Shome
1:30 P.M.	INVITED: Linearization Scheme for 1D Anisotropic Inversion of P Receiver Functions. **Park, J.**	INVITED: Poroelastic Stress Change and Fault Slip Induced by Fluid Injection. **Liu, Y. J.**, Deng, K., Harrington, R. M.	INVITED: An Overview of the Seismic Source and Ground Motions during the Mw 7.8 Kaikoura Earthquake, New Zealand. **Kaiser, A. E.**, Horspool, N., McVerry, G., Holden, C., Hamling, I., Kaneko, Y., Benites, R., Wotherspoon, L., Fry, B., Houtte, C., Avery, H.	INVITED: HayWired Scenario Mainshock—Liquefaction Probability Mapping and Hazus Loss estimation. **Wein, A. M.**, Knudsen, K., Seligson, H., Jones, J.

Time	*Governor's Square 15*	*Governor's Square 16*	*Governor's Square 12*
	Machine Learning and its Application to Earthquake and Explosion Signal Analysis	**Earthquake Rapid Response**	**Overcoming Challenges in Seismic Risk Communication...**
11:30 A.M.	Machine and Auditory Clustering of a Large Set of Seismic Events. **Pate, A.**, Holtzman, B. K., Paisley, J. W., Waldhauser, F., Repetto, D.	STUDENT: Aftershock Sequence of the 2011 Virginia Earthquake with High Spatial Resolution and Low Magnitude Threshold Using the Dense AIDA Array and Back-Projection. **Beskardes, G. D.**, Hole, J. A., Wu, Q., Chapman, M. C., Davenport, K. K., Wang, K., Michaelides, M., Brown, L. D., Quiros, D. A.	How Science Impacts Decision Making: UCERF 3 Case Study for Loss Estimation in California. **Bolton, M. K.**, Thenhaus, P. C., Larsen, T.
11:45 A.M.	Examples and Analysis of Adaptive Self-Tuning of a Seismic Signal Detector. **Draelos, T. J.**, Knox, H. A., Peterson, M. G., Ziegler, A. E.	Aftershock Imaging with Dense Arrays (AIDA): Insights from the 2011 Mineral Springs Virginia RAPID Experiment. **Brown, L. D.**, Hole, J. A., Quiros, D. A., Davenport, K. K., Kim, D., Beskardes, G. D., Chapman, M. C., Mooney, W. D.	People Listen to Seismologists and Still Don't Prepare for Earthquakes...Why? **Lamontagne, M.**, Flynn, B.
Noon–1:30 P.M.	Lunch		
	Recent Innovations in Geophone Array Seismology Session Chairs: Fan-Chi Lin, Marianne Karplus	**SSA-ESC Joint Session on Advances in Geotechnical Borehole Arrays, Data and Analyses** Session Chairs: Jamison Steidl, Ramin Motamed, Umit Dikmen, Stefano Parolai	**Estimating Earthquake Hazard from Geodetic Data** Session Chairs: Jeff Freymueller, Elieen Evans, Jessica Murray
1:30 P.M.	INVITED: Structural Properties and Detection of Small Events in the San Jacinto Fault Zone and Other Southern California Regions Based on Seismic Array Data. **Ben-Zion, Y.**	Body Wave Interference at Borehole Receivers Helps to Define the Local Velocity Model. **Priolo, E.**, Laurenzano, G., Mucciarelli, M., Martelli, L., Romanelli, M.	INVITED: STUDENT: Estimating Interseismic Surface Strain and Moment Deficit Rates in Southern California Using Geodetic Data. **Maurer, J. L.**, Segall, P., Johnson, K.

Wednesday 19 April (*continued*)

Time	*Plaza Ballroom D*	*Plaza Ballroom E*	*Plaza Ballroom F*	*Governor's Square 14*
	Fine Scale Structure of the Crust and Upper Mantle	**Assessment and Management of Hazards...**	**The Mw7.8 Kaikoura Earthquake**	**Earthquake Impacts on the Natural and Built...**
1:45 P.M.	INVITED: Fine Scale Structure of Seismic Anisotropy beneath Western Tibet.. **Levin, V.**, Schulte-Pelkum, V.	INVITED: Statistical Modeling of Induced Seismicity. **Shcherbakov, R.**	Multiple Fault Ground Surface Ruptures in the 14 November 2016 Kaikoura Earthquake, New Zealand. **Litchfield, N. J.**, Benson, A., Bischoff, A., Hatem, A., Barrier, A., Nicol, A., Wandres, A., Lukovic, B., Hall, B., Gasston, C., Asher, C., Grimshaw, C., Madugo, C., Fenton, C., Hale, D., Barrell, D. J. A., Heron, D. W., Strong, D. T., Townsend, D. B., Noble, D., Fenton, F., Howarth, J., Pettinga, J., Kearse, J., Williams, J., Manousakis, J., Borella, J., Mountjoy, J., Rowland, J., Clark, K. J., Pedley, K., Sauer, K., Berryman, K. R., Hemphill-Haley, M., Stirling, M. W., Villeneuve, M., Cockroft, M., Khajavi, N., Barnes, P., Villamor, P., Carne, R., Langridge, R. M., Zinke, R., Van Dissen, R. J., McColl, S., Cox, S. C., Lawson, S., Little, T., Stahl, T., Cochran, U. A., Toy, V., Ries, W. F., Juniper, Z.	STUDENT: Can We Predict the Impact of Seismically Induced Landslides? **Jessee (Nowicki), M. A.**, Hamburger, M. W., Ferrara, M. R., Robeson, S., FitzGerald, C.
2 P.M.	Lithospheric Fabric and Shear Zones in Southern California and the Basin and Range from Anisotropic Receiver Function Conversions and Other Stress and Strain Observables. **Schulte-Pelkum, V.**, Becker, T. W., Miller, M. S.	A Seismological Overview of the Induced Earthquakes in the Duvernay Play near Fox Creek, Alberta. **Schultz, R.**, Wang, R., Gu, Y. G., Haug, K., Atkinson, G.	The M7.8 2016 Kaikoura Earthquake in the Context of the National Seismic Hazard Model. **Stirling, M. W.**, Gerstenberger, M. C.	INVITED: STUDENT: The Impact of Rockfalls on Dwellings During the 2011 Christchurch, New Zealand Earthquakes. **Grant, A.**, Wartman, J., Massey, C., Olsen, M. J., O'Banion, M., Motley, M.
2:15 P.M.	Comparative Riftology: Insights from Crustal Structure Into the Evolution of Continental Rifts and Passive Continental Margins. **Stein, S.**, Stein, C., Kley, J., Keller, G. R., Wysession, M., Fredricksen, A., Elling, R.	STUDENT: Event Origin Depth Uncertainty - Estimation and Mitigation Using Waveform Similarity. **Biryukov, A.**, Chzen, E., Dettmer, J., Eaton, D.	Widespread Triggering of Slow-Slip Earthquakes during the Mw7.8 Kaikoura Earthquake: Implications for Earthquake Forecasting. **Gerstenberger, M. C.**, Wallace, L., Fry, B.	Rapidly Imaging Earthquake Damage Using Satellite SAR Data: 2016 Central Italy Earthquakes. **Yun, S.**, Liang, C., Webb, F., Simons, M., Manipon, G., Dang, L., Fielding, E., Gurrola, E., Agram, P., Hua, H., Owen, S., Diaz, E., Milillo, P., Rosen, P.

Time	*Governor's Square 15*	*Governor's Square 16*	*Governor's Square 12*
	Recent Innovations in Geophone Array Seismology	**SSA-ESC Joint Session on Advances in Geotechnical Borehole Arrays...**	**Estimating Earthquake Hazard from Geodetic Data**
1:45 P.M.	Characterizing Fault Damage Zone Structure Using Low-Cost Large-N Temporary Deployments of Fairfield Nodal Three-Component Instruments: Case Studies from the San Jacinto and Denali Faults. **Allam, A. A.**, Lin, F., Share, P., Wang, Y., Rabade, S., Berg, E., Ben-Zion, Y., Vernon, F., Tape, C., Schuster, G., Karplus, M.	Variation of High Frequency Spectral Attenuation Kappa in Vertical Arrays: A Case Study from Istanbul. Tanircan, G., **Dikmen, S. U.**	STUDENT: Strain Accumulation on Faults beneath Los Angeles: The Importance of the Sedimentary Basin, the Roles of Thrust and Strike-Slip Faulting, and the Return Period of M>7 Earthquakes. **Rollins, J. C.**, Avouac, J. P., Landry, W. Barbot, S. D., Argus, D. F.
2 P.M.	INVITED: Data Mining of IRIS Wavefield Experiment in Oklahoma. **Nakata, N.**	STUDENT: Investigation of Bi-Directional Shaking Effects in One-Dimensional Site Response Analysis Utilizing Geotechnical Downhole Array Data. Li, G., **Motamed, R.**, Dickenson, S.	Moment Accumulation Rates on Faults in Southern California from GPS Data. **Johnson, K. M.**, Maurer, J., Segall, P.
2:15 P.M.	Shallow Crustal Structure Revealed by the Yangtze River Large Volume Airgun Shot Experiment in Eastern China. **Yao, H. J.**, She, Y. Y., Zhai, Q. S.	STUDENT: Seismic Non-Linear Behavoir of Soil Inferred by the Analysis of the Kik-Net Borehole Data. **Castro Cruz, D.**, Bertrand, E., Régnier, J., Courboulex, F.	Model Uncertainties in Geodetic Slip Rates for Seismic Hazard in California. **Evans, E. L.**

Wednesday 19 April (*continued*)

Time	*Plaza Ballroom D*	*Plaza Ballroom E*	*Plaza Ballroom F*	*Governor's Square 14*
	Fine Scale Structure of the Crust and Upper Mantle	**Assessment and Management of Hazards…**	**The Mw7.8 Kaikoura Earthquake**	**Earthquake Impacts on the Natural and Built…**
2:30 P.M.	A New Lithospheric Density Model of the Conterminous United States and Implications for Intraplate Seismicity. **Levandowski, W.**, Herrmann, B., Boyd, O. S., Shen, W., Briggs, R. W., Gold, R. D.	Potential Seismic Hazards from Induced Earthquakes in Eastern Kentucky. **Wang, Z.**, Carpenter, N. S., Zhang, L. F.	Communicating Science at Speed: Lessons from Responding to the M7.8 Kaikoura Earthquake. **McBride, S. K.**, Kaiser, A., Gledhill, K., Jolly, G., Fry, W., Little, C., Balfour, N., Page, S., Holden, C.; Ristau, J.; Gerstenberger, M.; Leonard, G.; Bannister, S.; Rhoades, D.; Christopherson, A. M.; Potter, S.; Becker, J.; Johnston, D. M.; Wallace, L.; Cochran, U.; Clark, K.; Power, W.; Kaneko, Y; Jack, H.; Dellow, S.; Brackley, H.; Woods, R.; Daly, M.; Hamling, I.; Hreinsdottir, S.; Berryman, K.; Pinal, C.; Bland, L.; Villamor, P.; Van Dissen, R.; Thomson, J.; Massey, C.; Guest, R.; Clitheroe, G.; Townend, J.	INVITED: Improving Regional Liquefaction Hazard Maps Using Hydrological Remote Sensing Data: A Proof of Concept Study at Imperial County. **Mital, U.**, Asimaki, D., Rajasekaran, E., Das, N. N., Stock, J.
2:45–3:45 P.M.	Posters and Break			
	Recent Advances in Earthquake Triggering and Aftershock Forecasting Session Chairs: Margarita Segou, Andrea Llenos	**Assessment and Management of Hazards from Seismicity Induced by Hydraulic Fracturing** (continued)	**The Mw7.8 Kaikoura Earthquake** (continued)	**Earthquake Impacts on the Natural and Built Environment** (continued)
3:45 P.M.	INVITED: Triggering of Major Earthquakes near the Southernmost Terminus of the San Andreas Fault: Implications of Recent Earthquake Clusters for Earthquake Risk in Southern California. **Hauksson, E.**, Meier, M. A., Ross, Z. E., Jones, L. M.	INVITED: Correlation Algorithms to Better Characterize Seismicity Induced by Hydraulic Fracturing. **Brudzinski, M. R.**, Skoumal, R. J., Rakowski, J., Smith, S., Kozlowska, M. A., Baxter, N. D., Friberg, P. A., Currie, B. S.	Back-Projection of Regional Data Yields a Detailed Picture of Complex Multi-Fault Rupture During the Mw7.8 Kaikoura Earthquake. **Fry, B.**, Kao, H.	INVITED: STUDENT: Ground Motion Prediction Equations for Arias Intensity, Cumulative Absolute Velocity, and Peak Incremental Ground Velocity for Rock Sites in Different Tectonic Environments. **Bullock, Z.**, Dashti, S., Liel, A. B., Karimi, Z., Bradley, B. A.
4 P.M.	Foreshocks to Aftershocks: Insights into the M7.1 Te Araroa Earthquake (NZ), from Matched-Filter Detection. **Warren-Smith, E.**, Fry, B.	Dynamics of Fault Activation by Hydraulic Fracturing in Overpressured Shale Formations. **Eaton, D. W.**, Bao, X., Cheadle, B. A.	Reconciling the Dilemma of a Megathrust Earthquake or a Crustal Strike-Slip Faulting Event: The 2016 Kaikoura, NZ Earthquake. **Furlong, K. P.**, Herman, M. W., Hayes, G. P.	INVITED: Case Study: How Stochastic Modeling is Driving the Next Generation of Resilience. **Stillwell, K.**, Lee, Y. J., Huyck, C. K.

Time	*Governor's Square 15*	*Governor's Square 16*	*Governor's Square 12*
	Recent Innovations in Geophone Array Seismology	**SSA-ESC Joint Session on Advances in Geotechnical Borehole Arrays…**	**Estimating Earthquake Hazard from Geodetic Data**
2:30 P.M.	Imaging Seismic Structure of Geothermal Reservoir with Large N Array at Brady Hot Springs, Nevada. **Thurber, C.**, Zeng, X., Parker, L., Lord, N., Fratta, D., Wang, H., Matzel, E., Robertson, M., Feigl, K. L., PoroTomo Team	Investigation of Soil-Structure Interaction Effects through Wave Propagation Analysis in Building-Soil-Layers. Petrovic, B., **Parolai, S.**, Pianese, G., Dikmen, U. S., Moldobekov, B., Orunbaev, S., Paolucci, R.	A New Geodetically-Derived Seismicity Model for Italy. **D'Agostino, N.**
2:45–3:45 P.M.	Posters and Break		
	Recent Innovations in Geophone Array Seismology (continued)	**Scaling and Empirical Relationships of Moderate to Large Earthquakes: Re-scaling or Re-thinking?** Session Chairs: Laura Peruzza, P. Martin Mai, Lucilla Benedetti	**Estimating Earthquake Hazard from Geodetic Data** (continued)
3:45 P.M.	INVITED: Seismicity Detection and Signal Analysis with the Mount St Helens Nodal Array. **Hansen, S. M.**, Schmandt, B., Glasgow, M.	INVITED: Fault Slip Rate and Constant Stress Drop as Improvements to Magnitude-Length Scaling. **Biasi, G. P.**, Anderson, J. G., Wesnousky, S. G.	STUDENT: Slow Slip Events and the Earthquake Cycle: Nicoya, Costa Rica. **Voss, N. K.**, Dixon, T. H., Malservisi, R., Protti, M.
4 P.M.	INVITED: Nodal Seismic Recording of Aftershocks of the Mw5.8 Pawnee Earthquake. **Keranen, K.**, Gallacher, R., Savage, H. M.	INVITED: Earthquake Scaling Relationships Estimated from 25 Years of Source Models Derived from InSAR Data. **Funning, G. J.**, Weston, J., Ferreira, A. M. G.	INVITED: STUDENT: Geodetically-Constrained Viscoelastic Block Models and Time-Dependent Stress Transfer along the North Anatolian Fault. **DeVries, P. R.**, Krastev, P., Meade, B. J.

Wednesday 19 April (*continued*)

Time	*Plaza Ballroom D*	*Plaza Ballroom E*	*Plaza Ballroom F*	*Governor's Square 14*
	Recent Advances in Earthquake Triggering...	**Assessment and Management of Hazards...**	**The Mw7.8 Kaikoura Earthquake**	**Earthquake Impacts on the Natural and Built...**
4:15 P.M.	Assessing WCEDS as an Alternative Pipeline Processing System. **Arrowsmith, S. J.**, Young, C., Pankow, K.	Mitigation Strategies to Prevent Damage to Critical Infrastructure Due to Induced Seismicity. **Atkinson, G. M.**	Preliminary Broadband Ground Motion Simulations of the 14 November 2016 Mw7.8 Kaikoura, New Zealand Earthquake. **Bradley, B. A.**, Razafindrakoto, H. N. T.	STUDENT: Broadband Ground Motion Simulation within the City of Duzce (Turkey) and Building Response Simulation. **Ozlu, E.**, Karimzadeh, S., Askan, A.
4:30 P.M.	Aftershock Duration and the Prevalence of Orphaned Aftershocks in the Apparent Background Rate. **van der Elst, N. J.**	Geomechanical Modeling of Induced Seismicity from Multi-Stage Hydraulic Fracturing. **Maxwell, S. C.**, Grob, M.	Kinematic Source Modeling and 3D Wavefield Simulations of the 2016 M7.8 Kaikoura Earthquake. **Holden, C. E.**, Kaneko, Y.	Practical Uses of a Scenario Describing Earthquake and Earthquake-Induced Landslide Impacts on Aizawl, India. Rodgers, J. E., **Clahan, K. B.**, Tobin, L. T., Kumar, H. K., Holmes, W. T., Seeber, L., Gahalaut, V. K., Ramancharla, P. K., Tlau, R., Jaisi, N., Zohmingthanga, Mintier, L., Katuri, A., Lalhmangaiha, D.
4:45 P.M.	Constraining the Magnitude of Extreme Aftershocks. **Shcherbakov, R.**, Zhuang, J., Ogata, Y.	Anisotropic Inhomogeneous Modeling of Hydraulic Fracturing Surveys. **King, J.**, Taylor, S., Hanson, D.	Improving Coseismic Landslide Models: Lessons Learned from the 2016 Kaikoura, New Zealand Earthquake. **Allstadt, K. E.**, Godt, J. W., Jibson, R. W., Rengers, F. K., Thompson, E. M., Wald, D. J., Massey, C. I., Cox, S. C.	Update to FEMA 366: Estimated Annualized Earthquake Losses for the United States. **Jaiswal, K. S.**, Bausch, D., Rozelle, J., Holub, J., McGowan, S., McAfee, S., Tong, M.
5–5:45 P.M.	Pint and Poster			
5:45–6:45 P.M.	Joyner Lecture			
6:45–8 P.M.	Reception			

Time	*Governor's Square 15*	*Governor's Square 16*	*Governor's Square 12*
	Recent Innovations in Geophone Array Seismology	**Scaling and Empirical Relationships of Moderate to Large Earthquakes...**	**Estimating Earthquake Hazard from Geodetic Data**
4:15 P.M.	Calibrating Dense Spatial Arrays for Amplitude Statics and Orientation Errors. **Langston, C. A.**	Examination of Source Scaling Relations for Crustal Earthquakes in Japan. Irikura, K. I., **Miyake, H.**, Miyakoshi, K., Kamae, K., Yoshida, K., Somei, K., Kurahashi, S.	Strain Invariance over an Earthquake Cycle and Geodetic Assessment of Seismic Hazard. Hussain, E., Wright, T. J., Walters, R. J., Bekaert, D. P. S., Lloyd, R., **Weiss, J. R.**
4:30 P.M.	INVITED: Using Graph Clustering to Locate Sources within a Dense Sensor Array. **Gerstoft, P.**, Riahi, N.	STUDENT: Surface Rupture Effects on Earthquake Moment-Area Scaling Relations. **Luo, Y.**, Ampuero, J. P., Miyakoshi, K., Irikura, K.	Dark Energy and Earthquakes: Elastic Strain Invisible to Geodesy. **Bilham, R.**, Mencin, D., Bendick, R., Burgmann, R.
4:45 P.M.	STUDENT: Weighted Random Sampling in Seismic Event Detection/Location (WRASED): Applications to Local, Regional, and Global Seismic Networks. **Zhu, L.**, Li, Z., Peng, Z., Liu, E., McClellan, J. H.	**DISCUSSION**	INVITED: A Robust Estimation of the North American Intra-Continental Strain Rate Field with Implications for Seismic Hazard. **Kreemer, C.**, Hammond, W. C., Blewitt, G.
5–5:45 P.M.	Pint and Poster		
5:45–6:45 P.M.	Joyner Lecture		
6:45–8 P.M.	Reception		

Wednesday 19 April (*continued*)

Poster Sessions

Fine Scale Structure of the Crust and Upper Mantle.

1. Student: Lithospheric Structure of Canadian Lithosphere from Joint Interpretation of Receiver Functions and Regional Travel Time Tomography. **Barantseva, O. A.**, Vinnik, L. P., Farra, V., van der Hilst, R. D.
2. Developing and Validating Path-Dependent Travel Time Uncertainty Estimates for All Phases of the Regional Seismic Travel Time (RSTT) Model. **Begnaud, M. L.**, Anderson, D. N., Phillips, W. S., Myers, S. C., Ballard, S.
3. The 3D Crustal Velocity Structure Under the Changbaishan Volcanic Area in Northeast China Inferred from Ambient Noise Tomography. **Chen, Q. F.**, Wang, W.
4. Active Magmatic Underplating in an Intraplate Setting: Crust/Mantle Moho Transition in the Western Eger Rift, Central Europe. **Hrubcova, P.**, Geissler, W. H., Braeuer, K., Kaempf, H., Vavrycuk, V., Tomek, C.
5. The Effects of the Iceland Plume Track on the Greenland's Lithosphere. **Knezevic Antonijevic, S.**, Lees, J. M.
6. Velocity Model beneath the Reykjanet Array Derived from Rayleigh Wave Dispersion. **Brokesova, J.**, Malek, J., Novotny, O.
7. 3D Local Earthquake Tomography of the Cocos Ridge Subduction at the Southeastern End of the Middle American Trench. Arroyo, I., **Linkimer, L.**, Grevemeyer, I., Alvarado, G.
8. The Lower Crust and Upper Mantle beneath the Tien Shan from Full Waveform Tomography. Baker, B. I. B., **Roecker, S. W.**
9. Upper Mantle Layering in the North American Craton Using Short and Long Period Seismic Constraints. **Romanowicz, B. A.**, Caló, M., Roy, C., Clouzet, P., Yuan, H., Bodin, H., Maurya, S.
10. A Global Radial Anisotropic Model of the Upper Mantle from Surface Wave Observations. **Priestley, K.**, Ho, T., Debayle, E.
11. Student: Composite Stochastic Models for Fine-Scale Structure of the Crust and Upper Mantle. **Song, X.**, Jordan, T. H.
12. Seismic Structure of the Crust and Upper Mantle of Madagascar. **Wysession, M. E.**, Pratt, M. J., Andriampenomanana, F., Rakotondraibe, T., Ramirez, C., Aleqabi, G., Wiens, D. A., Nyblade, A. A., Shore, P. J., Rambolamanana, G., Tucker, R. J.
13. Assessing the Robustness of Seismic Imaging Methods: A Study toward Quantifying Resolution in Seismic Tomography. **Youssof, M.**, Mai, M.

Source Discovery Using Differential Methods: Applications to Explosion Monitoring.

14. Characterizing Blast Wave Behavior at Solid-Gas Interfaces of Varying Curvature. **Chojnicki, K. N.**, Cooper, M. A., Guo, S.
15. Using Short-Period Surface Waves (Rg) as a Yield Estimator at Local Distances. **Napoli, V. J.**, Russell, D. R., Leidig, M.
16. Investigation of Seismic-Acoustic Coupling and MRg-Yield Relations through Surface Wave Analysis of Explosive Data in Different Geologies. **Phillips-Alonge, K. E.**, Napoli, V., Russell, D., Reinke, R.
17. Discriminating between Shallow, Natural Earthquakes and Blasts near Sussex, New Brunswick, Canada. **Bent, A. L.**, Lamontagne, M., Kolaj, M., McCormack, D. A., Adams, J.
18. Wave Propagation Effects on P/S Ratio at Local Distances for an SPE Explosion and Shallow Earthquake. **Pitarka, A.**, Walter, W., Chiang, A., Wagoner, J., Pyle, M.
19. Amplitude Difference Methods for Source, Site and Path Models Used in Explosion Monitoring Research. **Phillips, W. S.**, Fisk, M. D., Begnaud, M. L., Stead, R. J.
20. Coda-Wave Interferometry-Derived Source Separation between SPE-1 and -2 and Near-Source Medium Change between SPE-2 and -3. **Ford, S. R.**, Walter, W. R.
21. A Dry Alluvium Constitutive Model for Simulating the Source Physics Experiments (SPE). **Ezzedine, S.**, Vorobiev, O., Antoun, T., Glenn, L.
22. Numerical Simulation of near Field Ground Motions Observed during the Source Physics Experiments. **Vorobiev, O. Y.**, Ezzedine, S. M., Antoun, T. H., Glenn, L. A.
23. A Method for Yield Scaling FFT Velocity Amplitude Spectra from Chemical Explosions. **Steedman, D. W.**, Cashion, A. T., Bradley, C. R.
24. Seismic Wave Propagation from Underground Explosions: Influence of Topography on Wave Scattering and Ground Motions.. **Hirakawa, E. T.**, Ezzedine, S., Vorobiev, O., Pitarka, A., Glenn, L., Antoun, T., Walter, W.
25. Cross Borehole Change Detection Imaging for the Source Physics (SPE) at the Nevada National Security Site (NNSS). **Hoots, R.**, Knox, A., Abbott, E., Preston,
26. P-wave Attenuation of Yucca Flat, Nevada National Security Site. **Hoots, R.**, Abbott, E., Preston,
27. Towards Array Discrimination Using a Large-N deployment at the Nevada National Security Site. **Pyle, M. L.**, Euler, G. G.
28. Applying Insights from the Nevada Source Physics Experiments to the DPRK Declared Nuclear Test Seismic Signals. **Walter, W. R.**, Ford, S. R.
29. Relative Energy and Aperture Estimation of the Five Explosions in North Korea. **Li, L.**, Hao, C. Y.
30. Cross Comparison of Five DPRK Events Using Seismic Data of the International Monitoring System. **Villarroel, M.**, Bobrov, D., Kitov, I., Rozhkov, M.
31. Comparative Source Analysis of the DPRK Nuclear Events at Regional Scale: What We Can Learn About the Explosive Nature of the Events from Moment Tensor Inversions and MSVMAX. **Guilhem Trilla, A.**, Cano, Y.
32. Application and Validation of a Relative Relocation Technique for Explosion Monitoring. **Begnaud, M. L.**, Cleveland, K. M., Anderson, D. N., Pabian, F. V., Phillips, W. S., Rowe, C. A., Ballard, S.

Observations and Mechanisms of Anthropogenically Induced Seismicity.

33. Tilt Trivia: A Multiplayer App Teaching Induced Seismicity Concepts. **Kilb, D. L.**, Yang, A., Garrett, N., Hilke, V., Pankow, K., Rubinstein, J., Linville, L.
34. Student: Identifying New Earthquake Templates Adds Valuable Information to Induced Seismicity Sequences. **Linville, L. M.**, Pankow, K. L., Kilb, D. L., Rubinstein, J. L.
35. Persistent Multiplets in EGS Reservoir: The Case Study of Soultz-sous-Forêts, France. **Cauchie, L.**, Lengliné, O., Schmittbuhl, J.
36. Student: Spectrogram-Based Detection of Small Earthquakes in Continuous Waveform Data. **Cheng, Y.**, Ben-Zion, Y.
37. Reservoir Delineation from Microseismic Events at the Blue Mountain Geothermal Site. **Templeton, D.**, Matzel, E., Myers, S., Cladouhos, T.
38. 2016 Observations and Mitigation Strategies for Hydraulic Fracture Induced Seismicity in Ohio. Friberg, P., **Dricker, I.**, Kozlowska, M., Brudzinski, M.
39. Microseismicity Recorded in the Geothermal Areas of the Central Apennines (Italy). **Braun, T.**, Caciagli, M., Carapezza, M. L., Famiani, D., Gattuso, A., Lisi, A., Marchetti, A., Mele, G., Pagliuca, N.M.
40. Evaluating the Efficacy of Oklahoma Corporation Commission [WITHDRAWN] Induced Seismicity Reductions in Oklahoma. **Walter, J. I.**, Murray, K. E., Chang, J. C., Boak, J.
41. Performance of the Colombian Regional Seismic Network and of a Sparse Local Network for Detection and Characterization of the Seismic Activity in the Oil Zone of Puerto Gaitán, Llanos Orientales Basin (Colombia). Siervo, D., Reyes, M. D., **Dimate, M. C.**
42. The Milan Kansas Earthquake Fault: Narrow, Hydraulically Conductive and Critically-Stressed. **Hearn, E. H.**, Kolterman, C. E.
43. Student: Interpretation of Microseismicity Observed from Surface and Borehole Seismic Arrays During Hydraulic Fracturing in Shale - Bedding Plane Slip. **Stanek, F.**, Jechumtalova, Z., Eisner, L.
44. The Dallas-Fort Worth Airport Earthquake Sequence: Seismicity Beyond Injection Period. **Ogwari, P.**, DeShone, H., Hornbach, M. J.
45. A Half-Century of Induced Earthquakes in the Los Angeles Basin? **Hough, S. E.**, Page, M.
46. Comparison of Elastic Wavefield Simulations, Ray Tracing and Surface Array Data at the Groningen Gas Field: Implications for Induced Seismic Event Location and Characterization. **Wyer, P.**, Zurek, B., Burnett, W. A., Gist, G.

Assessment and Management of Hazards from Seismicity Induced by Hydraulic Fracturing.

47. Induced Seismicity Above Crystalline Basement: An Example from Alberta, Canada. **Bao, X.**, Eaton, D. W.
48. Student: Improving Earthquake Catalog Locations in the Western Canada Sedimentary Basin Using the Double-Difference Method. **Palmer, S. M.**, Atkinson, G. M.
49. Student: An Overview of Ground Motion Characteristics from Potentially Induced Seismic Events in Alberta, Canada. **Kaski, K. M.**, Atkinson, G. M.
50. Student: Decision Analysis in Microseismic Surveys Using the Value of Information Technique: A Case Study from the Salton Sea Geothermal Field. **Jreij, S. F.**, Trainor-Guitton, W., Matzel, E., Pyle, M.
51. Delineation of Basement Faults in Oklahoma and the Relation to Induced Earthquake Sequences. **Shah, A. K.**, Crain, K.
52. Student: Actions and Regulatory Guidelines for Oklahoma Earthquakes Outside the "Normal" Areas of Seismic Activity. **Chang, J. C.**, Walter, J. I.
53. A Systematic Seismogenic Pattern of Injection-Induced Earthquakes in Northeast British Columbia and Western Alberta, Canada. **Kao, H.**, Visser, R., Smith, B., Babaie Mahani, A.
54. Student: Improved Seismological and Geological Characterization of Seismicity Induced by Wastewater Disposal Near Marietta, Ohio. **Leveridge, M. C.**, Brudzinski, M. R., Currie, B. S., Skoumal, R. J., Free, J. C.
55. Monitoring the Background Earthquake Activity on Anticosti Island, Quebec, Canada, Prior to Potential Hydraulic Fracturing Work. **Lamontagne, M.**, Lavoie, D., Kao, H.
56. Student: Monitoring Microseismicity in the Rome Trough, Eastern Kentucky: Year One Observations and Network Performance. **Holcomb, A. S.**, Carpenter, N. S., Woolery, E. W., Wang, Z.
57. QuakeMonitorTM: Utilizing a Surface-Based Automated Sensor Network to Monitor and Detect Induced Seismic Events in a Highly-Active Industrial Environment. **Mohamud, A. H.**, Jarpe, S., Taylor, S. R., Weir-Jones, I.

Wednesday 19 April (*continued*)

Recent Innovations in Geophone Array Seismology.

58. IRIS Wavefields Community Experiment Using Nodal Arrays. **Sweet, J.**, Anderson, K., Woodward, R., Frassetto, A.
59. PH5 for Archiving and Translating Node and Other Geophysical Data: Examples from the IRIS Community Wavefield Demonstration Experiment. Azevedo, R. S., Hess, D., **Beaudoin, B. C.**
60. Huddle Tests of Fairfield Nodes and Texans on a UTEP Seismic Pier. **Harder, S. H.**, Karplus, M., Kaip, G. M.
61. The Source Physics Experiment Large N Array. **Mellors, R. J.**, Pitarka, A., Matzel, E., Walter, W., Snelson, C., Abbott, R.
62. Geophysical Structure at the SPE Site Using Surface Waves Recorded by the Large-N Seismic Array. **Chen, T.**, Snelson, C. M.
63. STUDENT: Internal Structure of the San Jacinto Fault Zone at Blackburn Saddle from a Dense Linear Deployment across the Fault. **Share, P.**, Allam, A. A., Ben-Zion, Y., Lin, F., Vernon, F. L., Karplus, M., Schuster, G.
64. STUDENT: Detection of Small Earthquakes with Dense Array Data on the San Jacinto Fault Zone. **Meng, H.**, Ben-Zion, Y.
65. Signal and Noise Coherence Lengths from 1Hz to 100Hz Using Large-N Deployments in Nevada and Oklahoma. **Euler, G. G.**, Pyle, M. L.
66. STUDENT: Detecting Seismicity in a Prospective Geothermal Play, Using a 48 Geophone Array. **Trow, A.**, Linville, L., Pankow, K., Wannamaker, P.
67. STUDENT: Preliminary Results from the Sevilleta Array in the Central Rio Grande Rift, NM: Virtual Source Reflection Imaging of the Socorro Magma Body. **Finlay, T.**, Worthington, L., Schmandt, B., Hansen, S., Bilek, S., Aster, R., Ranasinghe, N.
68. STUDENT: Applying Cross-Correlation Methods to Broadband and Nodal Data to Detect and Locate Earthquakes Associated with the Socorro Magma Body. **Vieceli, R. E.**, Bilek, S. L., Worthington, L. L., Schmandt, B., Aster, R. C.
69. STUDENT: Seismic Interferometry of the Bighorn Mountains: Using Virtual Source Gathers to Increase Fold in Sparse-Source, Dense-Receiver Active-Source Data. **Plescia, S. M.**, Sheehan, A. F., Haines, S. S., Cook, S. W., Worthington, L. L.
70. STUDENT: 3D Basement Structure of Granite-Rhyolite Province in Midcontinent U.S. Using "Surplus" Data from Oil and Gas Explorations. **Kim, D.**, Brown, L. D.
71. Reflection Imaging with Earthquake Sources and Dense Arrays. **Quiros, D. A.**, Brown, L. D., Davenport, K. K., Hole, J. A., Cabolova, A., Chen, C., Han, L., Chapman, M. C., Mooney, W. D.

Regional Variations in Seismological Characteristics: Implications for Seismic Hazard Analysis.

72. On the Regional Characteristics of the Components of Sigma Based on a Global Digital Strong-Motion Dataset. **Cauzzi, C.**, Faccioli, E.
73. USGS National Crustal Model for the Western United States, v1.0. **Boyd, O. S.**, Shah, A. K.
74. Ground-Motion Attenuation in the Sacramento-San Joaquin Delta, California from Seven Bay Area Earthquakes, Including the 2014 M6.0 South Napa Earthquake. **Erdem, J. E.**, Boatwright, J., Fletcher, J. B.
75. STUDENT: The Relationship Between Site Conditions and Kappa: Some Recent Observation. **Palmer, S. M.**, Atkinson, G. M.
76. STUDENT: Seismic Wave Propagation in Shallow Layers at the GONAF-Tuzla Site, Istanbul, Turkey. **Raub, C.**, Bohnhoff, M., Petrovic, B., Parolai, S., Malin, P.
77. The Effect of a Sedimentary Wedge on Earthquake Ground Motions: The Influence of Eastern U.S. Atlantic Coastal Plain Strata. **Pratt, T. L.**, Magnani, M. B.
78. Toward Estimating Site Effect in the Central United States from HVSR and Deep Borehole Recordings. **Carpenter, N. S.**, Wang, Z., Woolery, E. W.
79. Simulation of Hazard Consistent Site-Specific Time Histories Using Empirical Fourier Amplitude Spectrum Prediction Equations. **Traversa, P.**, Zentner, I.
80. STUDENT: Applicability of Peak Frequency as a Site-Effects Indicator in California. **Hassani, B.**, Atkinson, G. M.
81. STUDENT: Rupture Direction, Basin, and Distance Effects on Ground Motions from M7 Earthquakes on the Salt Lake City Segment of the Wasatch Fault, Utah. **Wang, N.**, Roten, D., Olsen, K. B., Pechmann, J. C.
82. An Equivalent Point-Source Stochastic Simulation of the NGA-West2 Ground Motion Prediction Equations. **Zandieh, A.**, Pezeshk, S., Campbell, K. W.
83. Examination of Ground Motion Simulation Modeling Uncertainty for the 2010 Mw 7.1 Darfield, New Zealand Earthquake. **Razafindrakoto, H. N. T.**, Bradley, B. A.
84. STUDENT: Partially Nonergodic Region Specific GMPEs for Iran. **Sedaghati, F.**, Pezeshk, S.
85. STUDENT: Evaluating Fundamental Seismological Parameters for Israel. **Giveon, M.**, Kamai, R.
86. Development of a New Strong Motion Database for Iran. **Farajpour, Z.**, Zare, M., Pezeshk, S.
87. Testing the Suitability of Global Ground Motion Models for the Western Balkan Region. **Gulerce, Z.**, Salic, R., Sandıkkaya, M. A., Milutinovic, Z.

Estimating Earthquake Hazard from Geodetic Data.

88. Mitigating Postseismic Bias in Global Positioning System Secular Velocity Estimates for the Central California Coast Region. **Murray, J. R.**, Svarc, J.
89. STUDENT: Geodetic Evidence for a Blind Segment of the San Jacinto Fault. **Tymofyeyeva, E.**, Fialko, Y.
90. Can Interseismic Geodetic Observations and Microseismicity Shed Light on Large Earthquake Behavior? Insights from Models of Long-Term Fault Slip. **Jiang, J.**, Fialko, Y., Lapusta, N.
91. Incorporating Geodetic Data into Seismic Hazard Assessment: Impact on Local Earthquake Risk. **Nyst, M.**
92. Power-Law Rheology Controls Aftershock Triggering and Decay. **Shcherbakov, R.**, Zhang, X.
93. The 2016 Earthquake Sequence and Associated Coseismic Deformation in Central Apennines in Italy. **Huang, M.**, Fielding, E. J., Liang, C., Milillo, P., Bekaert, D., Dreger, D.
94. Integrating Sentinel-1 InSAR and GNSS Data for Deformation Monitoring across the Alpine-Himalayan Belt. **Weiss, J. R.**, Wright, T. J., Walters, R. J., Hooper, A., Spaans, K., Hatton, E., Hussain, E., McDougall, A., Sandwell, D. T., Wessel, P., England, P.
95. STUDENT: National Seismic Hazard Maps for Ecuador. Beauval, C., Yepes, H., **Mariniere, J.**, Audin, L., Alvarado, A., Baize, S., Nocquet, J. M., Cotton, F., Drouet, S.
96. New Velocity Field for Northern Colombia and Western Venezuela and Implications for a Great Earthquake in the Southwest Caribbean. **Mencin, D. J.**, Bilham, R., Mora-Paez, H., Mattioli, G. S., La Femina, P., Audemard, F., Molnar, P.

The Mw7.8 Kaikoura Earthquake.

97. Source Characteristics of the 2016 Kaikoura and Te Araroa, New Zealand, Earthquake Sequences from Regional Moment Tensor Analysis. **Ristau, J.**
98. Surface Rupture and Slip Distribution of the 2016 Mw7.8 Kaikoura Earthquake (New Zealand) from Optical Satellite Image Correlation Using MicMac. Champenois, J., **Klinger, Y.**, Grandin, R., Satriano, C., Baize, S., Delorme, A., Scotti, O.
99. Imaging the 2016 Mw 7.8 Kaikoura, New Zealand Earthquake with Teleseismic P Waves: A Cascading Rupture across Multiple Faults. **Zhang, H.**, Koper, K. D., Pankow, K., Ge, Z.
100. Rapid Aftershock Detection and Analysis Following the M7.8 Kaikoura Earthquake Using Matched-Filter Techniques. **Chamberlain, C. J.**, Warren-Smith, E., Fry, B., Townend, J.

Recent Advances in Earthquake Triggering and Aftershock Forecasting.

101. Improving Iquique: How Detection Techniques Can be Used to Enhance Our Understanding of the 2014 Sequence. **Nealy, J. L.**, Hayes, G. P., Benz, H. M.
102. STUDENT: Visibility Graph Analysis of Southern California. **Azizzadehroodpish, S.**, Khoshnevis, N., Cramer, C.
103. Seismic Activity Analysis of Recent 15 Years Nearby Puerto Rico and Caribbean Region. Torres-Ortiz, D. M., **Huerta-Lopez, C. I.**

Earthquake Impacts on the Natural and Built Environment.

104. STUDENT: Probabilistic Seismic and Liquefaction Hazard Analysis of the Mississippi Embayment Incorporating Nonlinear Site Effects. **Dhar, M. S.**, Cramer, C. H.
105. An Update on the Integration of Ground Failure Hazard and Loss Estimates with USGS Real-Time Earthquake Products. **Allstadt, K. E.**, Thompson, E. M., Nowicki Jessee, M. A., Zhu, J., Tanyas, H., Wald, D. J., Hearne, M.
106. Estimating and Communicating the Impact of Earthquake-Induced Ground Failures. **Thompson, E. M.**, Allstadt, K., Jaiswal, K., Marano, K., Wald, D. J., Bausch, D.
107. Rapid Estimates of Earthquake-Induced Ground-Failure Likelihood in Switzerland. **Cauzzi, C.**, Fäh, D., Wiemer, S., Clinton, J., Wald, D. J.
108. Expansion of the USGS ShakeCast System for Rapid Post-Earthquake Assessments of Critical Facilities. **Lin, K. W.**, Wald, D. J., Kircher, C. A., Jaiswal, K., Luco, N., Turner, L. L., Slosky, D.
109. Re-Evaluation of Seismic Hazards at the Central and Eastern United States Nuclear Power Plant Sites. **Heeszel, D. S.**, Munson, C. G., Ake, J. P.
110. STUDENT: Validation of Simulated Ground Motions via Measuring the Sensitivity of Structural Demands to Different Characteristics of Ground Motions. **Kiani, J.**, Camp, C., Pezeshk, S.
111. STUDENT: Linking Sample Structural Responses to Seismological Parameters Inferred from Population through Hierarchical Modeling. **Dhulipala, S. L. N.**, Flint, M. M.
112. Correlation of Building Damage with Spectral Aspects of Near-Source Motions - Cushing, OK Induced M5.0 Earthquake of November 7, 2016. **Celebi, M. K.**, Luco, N., McGarr, A., McNamara, D., Rubinstein, J., Stephens, C. D., Williams, R. A.
113. Location, Amount and Width of the 1906 San Andreas Fault Surface Rupture at the Upper and Lower Crystal Springs Reservoir Embankment, San Francisco Peninsula. **Hull, A.**, Johnson, C., Jackson, H., Madugo, C.

Wednesday 19 April (*continued*)

Earthquake Rapid Response.

114. Student: Fault Structures Illuminated by the Aftershocks of the 2015 Mw 7.8 Gorkha Earthquake in Nepal as Captured by a Local Dense Seismic Network. **Mendoza, M. M.,** Ghosh, A., Karplus, M. S., Nabelek, J., Sapkota, S. N., Adhikari, L. B., Klemperer, S. L., Velasco, A.
115. Student: Local Seismic Amplification Measurements and Strong Motion Simulations in Port-au-Prince (Haiti). **ST Fleur, S.,** Courboulex, F., Bertrand, E., Mercier de Lepinay, B., Deschamps, A., Hough, S. E., Boisson, D., Cultrera, G.
116. Assessment of the Pacific Tsunami Warning Center's Readiness to Assume Local Tsunami Warning Center Responsibilities for Puerto Rico and the Virgin Islands Based on Performance Statistics between 2004 and 2016. **Sardina, V.,** Koyanagi, K.
117. Geodetic Infrastructure, Data, Education and Community Engagement for Earthquake Rapid Response: An Overview of UNAVCO Support Resources and Earthquake Response Examples. **Phillips, D. A.,** Meertens, C. M., Mattioli, G. S., Miller, M. M., Charlevoix, , Hodgkinson, K. M., Bartel, B., Maggert, D., Henderson, D., Williamson, H., Puskas, C., Baker, S., Blume, F., Normandeau, J., Feaux, F., Galetzka, J., Pettit, J., Crosby, C., Boler, F.
118. Early Results from Testing and Deployments of a Cascadia, an Instrument with over 200dB of Dynamic Range, Specifically Built for Aftershock Studies. **Parker, T.,** Moores, M., Bainbridge, G., Townsend, B.

SSA-ESC Joint Session on Advances in Geotechnical Borehole Arrays, Data and Analyses.

119. OTNX - A 3D Seismic Observatory for a Geothermal Drilling and Permeability Stimulation Experiment. Passmore, P. R., **Malin, P. E.,** Passmore, M. K., Valenzuela, S.
120. The Evolution of Excess Pore Pressure Generation and Dissipation: Observations from the Wildlife Liquefaction Array. **Steidl, J.**

Overcoming Challenges in Seismic Risk Communication.

121. SAFRR Tsunami Scenarios and the Importance of Choosing the Right Source. **Ross, S. L.,** Wood, N. J., Cheung, K. F., Chock, G. Y. K., Cox, D. A., Jones, J. L., Jones, L. M., Lynett, P. J., Miller, K., Nicolsky, D. J., Richards, K. J., Wein, A. M., Wilson, R. I., Yamazaki Y.
122. 565 Earthquake Hazards Questions. **Wald, L. A.**

From Field Site to Data Center: Network Innovations for Earthquake Early Warning.

123. ANZA Seismic Network: Real-Time Continuous Response Spectra Exceedance Calculation. **Vernon, F. L.,** Harvey, D., Lindquist, K., Franke, M.
124. Cybersecurity for Seismic Networks. **Bruton, C. P.,** Stubailo, I., Alvarez, M., Bhadha, R., Hauksson, E., Watkins, M. B.

Scaling and Empirical Relationships of Moderate to Large Earthquakes: Re-scaling or Re-thinking?

125. A Critical Review of Empirical Earthquake Source Scaling Relationships. **Pace, B.,** Valentini, A., Ferrari, F., Visini, F.
126. Earthquake Scaling Relationship for Volcano-Tectonic Earthquakes: A Case-Study from Mt. Etna (Italy). Azzaro, R., D'Amico, S., **Pace, B.**
127. Family Tree of Magnitude Versus Rupture Size Relationships. **Peruzza, L.,** Fault2SHA, W. G.
128. Advanced Empirical Scaling Laws for Earthquake Sources. **Thingbaijam, K. K. S.,** Mai, P. M., Goda, K.

Machine Learning and its Application to Earthquake and Explosion Signal Analysis.

129. Student: Supervised Machine Learning on a Network Scale: Application to Seismic Event Classification and Detection. **Reynen, A. M. G.,** Audet, P.
130. Single-Channel Based Earthquake Detection by Matching Spectrogram Images. **Skurikhin, A. N.,** Stead, R. J.
131. Student: Evaluation of Adaptive Sensor Tuning for Microseismic Event Detection Across Multiple Arrays and in Varying Noise Conditions at a Carbon Capture, Utilization, and Storage Site, Farnsworth Unit, Ochiltree County, Texas. **Ziegler, A. E.,** Knox, H. A., Balch, R. S., Draelos, T. J., Peterson, M. G., Van Wijk, J.
132. Student: Analysis and Characterization of Hydroacoustic Data Collected by Autonomous MERMAID Floats. **Simon, J. D.,** Simons, F. J., Hello, Y., Nolet, G.

Ground Motions and GMPEs.

133. Student: A Model for Estimating Amplification Effects on Seismic Hazards and Scenario Ground Motions in Southern Ontario. **Braganza, S. C.,** Atkinson, G. M.
134. Comparison among the Graizer-Kalkan (GK15) GMPE and Two NGA-West2 GMPEs. **Kalkan, E.,** Graizer, V.
135. Student: An Energy-Based Seismic Response Evaluation of Simple Structural Systems with Simulated Ground Motions. **Karim Zadeh Naghshineh, S.,** Askan, A., Erberik, M., Ozsarac, V.
136. Student: Data Processing with Non-Causal Zero-Phase Filters Under Predict NGA 2 GMPEs. **Roh, B.,** Buyco, K., Heaton, T. H.
137. Student: A New Generation of Ground-Motion Prediction Equations Using an Integrated Database for Iran. **Farajpour, Z.,** Zare, M., Pezeshk, S., Haji-Soltani, A.
138. Student: On the Bayesian Inference of Random Effects in the Recalibration of Ground-Motion Models to Icelandic Earthquakes. **Kowsari, M.,** Sonnemann, T., Halldorsson, B., Hrafnkelsson, B.
139. Student: Development of Source-To-Site Distance Conversion Equations for the Extended-Fault Sources. **Sedaghati, F.,** Tavakoli, B., Pezeshk, S.
140. Student: Implications of the Inter-Period Correlation of Strong Ground Motions on Structural Risk. **Bayless, J. R.,** Abrahamson, N. A.
141. Site Response of the Vertical Ground Motion and Its Correlation with Alternative Profile Proxies. Pe'er, G., **Kamai, R.**
142. Never Fear Velocity Reversals. **Yagoda-Biran, G.,** Kamai, R., Kerpel, B.
143. Student: Hybrid Empirical Ground-Motion Prediction Equations for the Gulf Coast Region. Pezeshk, S., **Haji-Soltani, A.,** Zandieh, A.
144. Student: Relationships among Various Definitions of Horizontal Spectral Accelerations in Central and Eastern North America. **Haji-Soltani, A.,** Pezeshk, S.
145. Student: Comparison of Different Approaches to Incorporate Site Effects and Associated Uncertainties in Probabilistic Seismic Hazard Analysis: Application for a Liquid Natural Gas Tank. **Haji-Soltani, A.,** Pezeshk, S.

Help SSA Identify Outstanding Student Presentations

Help SSA recognize outstanding student presentations by nominating deserving presenters for a Student Presentation Award. Any attendee is invited to submit nominations for as many presentations as they choose. (All student presentations have "STUDENT" printed before their titles in both the program and meeting app. Additionally, students presenting posters will have a yellow sign posted on their boards.)

You may NOT nominate:

- your own student or advisee
- a student from your own institution
- a student working on a project with you

Deadlines

Forms must be received by 6 p.m. on:

- Thursday, 20 April for the paper form
- Friday, 21 April for the online version

Submit your nominations at drop boxes located inside session rooms and at the meeting registration desk, or fill out the online form found at **surveymonkey.com/s/ssastudentpres** and in the survey section of the meeting app.

Thursday, 20 April—Oral Sessions
Presenting author is indicated in bold.

Time	*Plaza Ballroom D*	*Plaza Ballroom E*	*Plaza Ballroom F*	*Governor's Square 14*
	Earthquake Complexities Revealed by Kinematic and Dynamic Modeling and Multiple Geophysical Data Sets Session Chairs: Wenyuan Fan, P. Martin Mai, David D. Oglesby	**Understanding and Modeling Ground Motions and Seismic Hazard from Induced Earthquakes** Session Chairs: Annemarie Baltay, Daniel McNamara, Eric Thompson, Mark Petersen	**The Future of Past Earthquakes** Session Chairs: David Schwartz, Ramon Arrowsmith, William Lettis, Koji Okumura, Daniela Pantosti, Thomas Rockwell	**Verification and Validation of Earthquake Occurrence and Hazard Forecasts** Session Chairs: Seth Stein, John Rundle, Mark Petersen
8:30 A.M.	Intraslab Rupture Triggering Megathrust Rupture Co-Seismically in the December 17, 2016 Solomon Islands Mw 7.9 Earthquake. **Lay, T.**, Ye, L., Ammon, C. J., Kanamori, H.	2017 One-Year Seismic Hazard Forecast for the Central and Eastern United States from Induced and Natural Earthquakes. **Petersen, M.**, Mueller, C., Moschetti, M., Hoover, S., Shumway, A., McNamara, D., Willaims, R., Llenos, A., Ellsworth, W., Michael, A., Rubinstein, J., McGarr, A., Rukstales, K.	INVITED: Geometric Complexity in Past Ruptures and Lessons for Hazard and Future Ruptures. **Biasi, G. P.**, Wesnousky, S. G.	Nowcasting Earthquakes: Applications and Sensitivity Testing. **Rundle, J. B.**, Donnellan, A., Luginbuhl, M., Giguerre, A., Turcotte, D. L.
8:45 A.M.	Imaging Complex Fault Slip History of 2016 Taiwan and Japan Earthquakes with Geodetic and Seismic Data. **Fielding, E. J.**, Huang, M. H., Liang, C., Yue, H., Simons, M.	Comparison between the 2016 USGS Induced-Seismicity Hazard One-Year Forecast and the 2016 "Did You Feel It?" Data Archive. **White, I.**, Liu, T., Luco, N., Liel, A.	INVITED: The Mechanics of Multifault Ruptures and the Keystone Fault Hypothesis. **Fletcher, J. M.**, Oskin, M. E., Teran, O. J.	INVITED: Insights from Population Forecasting for Earthquake Hazard Forecasting. **Spencer, B. D.**, Stein, S., Brooks, E. M., Salditch, L.
9 A.M.	Rupture Process of the 2016 Kumamoto Earthquake Revealed by Waveform Inversion with Empirical Green's Functions. **Nozu, A.**, Nagasaka, Y.	INVITED: A Better Understanding of the Seismic Hazard of Induced Earthquakes from High-Resolution Structure, Crustal Anisotropy, and Source Properties of the M_w 5.7 Prague Earthquake. **Cochran, E. S.**, Clerc, F., Sumy, D. F., Neighbors, C. J., Keranen, K. M.	INVITED: Multidisciplinary Paleoseismic Investigations of Complex Earthquake Ruptures: Characterising the Predecessors of the 2010 Mw 7.1 Darfield Earthquake in New Zealand. **Quigley, M. C.**, Van Dissen, R., Nicol, A., Hornblow, S., Sasnett, P., Cruden, A., Jiménez, A., Steacy, S., Duffy, B., Pettinga, J.	Probabilistic Framework and Experimental Concepts for Testing Earthquake Forecasting and Seismic Hazard Models. **Jordan, T. H.**, Marzocchi, W.
9:15 A.M.	Directivity and Rupture Velocity of Small Earthquakes. **Abercrombie, R. E.**, Poli, P., Bannister, S. C., Ruhl, C. J., Chen, X.	INVITED: Evaluation of the Fitting Accuracy for the Source Parameter Estimation of Potentially Induced Earthquakes in Oklahoma. **Yoshimitsu, N.**, Ellsworth, W.	Large Magnitude Earthquakes in New Zealand: What is the Norm? **Nicol, A.**, Van Dissen, R. J., Stirling, M. W., Gerstenberger, M. C., Khajavi, N.	How Good Should We Expect Probabilistic Seismic Hazard Maps To Be? Vanneste, K., **Stein, S.**, Camelbeeck, T., Vleminckx, T.

Time	*Governor's Square 15*	*Governor's Square 16*	*Governor's Square 12*
	Advances in Seismic Full Waveform Modeling, Inversion and Their Applications Session Chairs: Nian Wang, Xueyang Bao, Dmitry Borisov, Youyi Ruan	**Recent Advances in Very Broadband Seismology** Session Chairs: Adam Ringler, David Wilson, Robert Anthony	**Theoretical and Methodological Innovations for 3D/4D Seismic Imaging of Near-surface, Crustal, and Global Scales** Session Chairs: Marco Pilz, Nori Nakata
8:30 A.M.	STUDENT: 3D Ground Motion Simulation of the Ladysmith Earthquake for Kinburn Basin. **Esmaeilzadeh, A.**, Motazedian, D.	Physical Mechanisms of Seismometer Site Noise and Self-Noise. **Bainbridge, G.**, Upadhyaya, S., Townsend, B., Parker, T., Moores, A.	INVITED: Time-Lapse Changes in Seismic Velocity Log-Time Recovery of Earth Materials. **Snieder, R.**, Sens-Schoenfelder, C., Nakata, N., Li, X.
8:45 A.M.	Full Waveform Modeling with Mesh Refinement in SW4. **Petersson, N. A.**, Sjogreen, B., Rodgers, A. J.	INVITED: Installation Techniques Used to Maximize Data Quality at Global Seismographic Network Stations. **Davis, P.**, Berger, J., Ebeling, C., Hafner, K.	STUDENT: A New Approach to Constrain Near-Surface Seismic Structure Based Upon Body-Wave Polarization. **Park, S.**, Ishii, M.
9 A.M.	INVITED: Three-Dimensional Ground Motion Simulations of Moderate Earthquakes and Large Scenario Ruptures in the San Francisco Bay Area. **Rodgers, A. J.**, Petersson, N. A., Pitarka, A.	A Portable Fiber Optic Gyroscope - Performance and First Field Tests. **Braun, T.**, Wassermann, J., Ripepe, M., Bernauer, F., Guattari, F., Igel, H.	STUDENT: Analysis of Non-Diffuse Characteristics of the Seismic Noise Field in Southern California Based on Neighboring Frequency Correlation. **Liu, X.**, Ben-Zion, Y.
9:15 A.M.	Investigation of Scattered Wavefield by Using Full-Wave Simulations. **Bao, X.**, Shen, Y.	Progress in the Development of an Optical Seismometer. **Zumberge, M.**, Wielandt, E., Berger, J.	An Investigation on Time-Frequency Domain Phase Weighted Stacking and its Application to Phase Velocity Extraction from Ambient Noise Based Empirical Green's Functions. **Niu, F.**, Li, G., Yang, Y.

Thursday 20 April (*continued*)

Time	Plaza Ballroom D	Plaza Ballroom E	Plaza Ballroom F	Governor's Square 14
	Earthquake Complexities Revealed by Kinematic …	**Understanding and Modeling Ground…**	**The Future of Past Earthquakes**	**Verification and Validation of Earthquake…**
9:30 A.M.	Uncertainties in Teleseismic Rupture Models Using a Monte Carlo Approach: The Mw 7.3 Papanoa, Mexico Subduction Earthquake of 18 April 2014. **Mendoza, C.**, Martinez-Lopez, M. R.	STUDENT: Examining Earthquake Source Properties and Scaling of Recent Seismicity in Southern Kansas. **Trugman, D. T.**, Dougherty, S. L., Cochran, E. S., Shearer, P. M.	New Scenarios for Paleoseismological Ruptures Based on the 2016 Central Italy Earthquake Sequence. **Civico, R.**, Pantosti, D., Villani, F., Cinti, F. R., Pucci, S., De Martini, P. M.	INVITED: Improving Earthquake Forecasts with Crustal Deformation Observations. **Donnellan, A.**, Parker, J. W., Granat, , Rundle, J., Grant Ludwig, L., Arrowsmith, R., DeLong, S., Ben-Zion, Y.
9:45–10:45 A.M.	Posters and Break		**DISCUSSION**	Posters and Break
	Earthquake Complexities Revealed by Kinematic and Dynamic Modeling and Multiple Geophysical Data Sets (continued)	**Understanding and Modeling Ground Motions and Seismic Hazard from Induced Earthquakes** (continued)	**The Future of Past Earthquakes** (continued)	**Verification and Validation of Earthquake Occurrence and Hazard Forecasts** (continued)
10:45 A.M.	INVITED: Multiscale Probabilistic Imaging of Tsunamigenic Seafloor Deformation During the 2011 Tohoku-oki Earthquake. **Jiang, J.**, Simons, M.	INVITED: STUDENT: Using Simulated Ground Motions to Constrain Near-Source Ground Motion Prediction Equations in Areas Experiencing Induced Seismicity. **Bydlon, S. A.**, Dunham, E. M.	Segmentation and Supercycles: Earthquake Cycle Complexities and the Sumatran Sunda Megathrust as a Behavior Catalog. **Philibosian, B.**, Meltzner, A. J., Sieh, K.	Seismic Hazard Prediction or Forecasting in the Central United States. **Wang, Z.**
11 A.M.	INVITED: The 2011 Mw 9.0 Tohoku Earthquake: Dynamic Rupture with Rupture Reactivation and Ground Motion Simulation. **Galvez, P.**, Dalguer, L. A.	Ground Motions from Induced Earthquakes in Oklahoma and Kansas. **Moschetti, M. P.**, Thompson, E. M., McNamara, D., Powers, P. M., Hoover, S.	Paleoseismology of the Collision Plate Boundary on the Himalayan Front. **Okumura, K.**, Malik, J. N.	INVITED: STUDENT: Assessing Earthquake Hazard Map Performance for Natural and Induced Earthquakes. **Brooks, E. M.**, McNamara, D., Petersen, M., Stein, S., Moschetti, M., Spencer, B. D., Shumway, A., Salditch, L.
11:15 A.M.	Dynamic Models of Large Ruptures on the Southern San Andreas Fault. **Lozos, J. C.**	INVITED: A Ground Motion Prediction Equation for Induced Oklahoma Earthquakes. **Yenier, E.**, Atkinson, G. M., Baturan, D.	Integrated Seismic Hazard Investigations and Progressive Reduction of Uncertainties: The North Anatolian Fault as a Case Example. **Kozaci, O.**	INVITED: STUDENT: Are Large Global Earthquakes Temporally Clustered? **Luginbuhl, M.**, Rundle, J. B., Turcotte, D. L.
11:30 A.M.	STUDENT: Pulse-Like Property and Complex Fault Geometry on Dynamic Rupture Models of the 2015 Mw7.8 Nepal Earthquake. **Wang, Y.**, Day, S. M., Denolle, M.	Are Ground-Motion Models Derived from Natural Events Applicable to the Estimation of Expected Motions for Induced Earthquakes? **Atkinson, G. M.**, Assatourians, K.	INVITED: Earthquake Cascade along Large Strike-Slip Faults, Rule or Exception? **Klinger, Y.**, Xu, X., Lefevre, M., Tapponnier, P., Liu, J., Le Béon, M.	STUDENT: Modeling Earthquake Clusters as Resulting From Long-Term Fault Memory. **Salditch, L. M.**, Brooks, E. M., Stein, S., Spencer, B. D., Agnon, A.

Time	Governor's Square 15	Governor's Square 16	Governor's Square 12
	Advances in Seismic Full Waveform Modeling, Inversion…	**Recent Advances in Very Broadband Seismology**	**Theoretical and Methodological Innovations for 3D/4D…**
9:30 A.M.	Detection of Voids Using 3D Elastic Full Waveform Inversion. **Borisov, D.**, Smith, J., Tromp, J., Miller, R., Peterie, S., Cudney, H., Sloan, S., Moran, M.	Seismogeodetic Instruments as Broadband Seismometers for Local Earthquake Early Warning and Rapid Response. **Bock, Y.**, Goldberg, D. E.	STUDENT: New High-Resolution 3D Imagery of Fault Deformation and Segmentation of the San Onofre Trend in the Inner California Borderlands. **Holmes, J. J.**, Driscoll, N. W., Kent, G. W.
9:45–10:45 A.M.	Posters and Break		
	Advances in Seismic Full Waveform Modeling, Inversion and Their Applications (continued)	**Recent Advances in Very Broadband Seismology** (continued)	**Earthquakes and Tsunamis** Session Chairs: Rich Briggs, Gavin Hayes
10:45 A.M.	INVITED: Structure and Physical Characteristics of the Southern Hikurangi Subduction Zone Derived from Seismic Full Waveform Imaging. **Arnulf, A. F.**, GNS Science Scientists	INVITED: Horizontal Seismometers - Determining Orientation and Self-Noise. **Hellweg, M.**, Taira, T., Uhrhammer, R. A.	Advancement of Seismological Datasets at ISC. **Storchak, D. A.**, Harris, J., Di Giacomo, D., Lentas, K.
11 A.M.	Lithospheric Foundering and Underthrusting Imaged beneath Tibet Revealed by Adjoint Tomography. **Chen, M.**, Niu, F., Tromp, J., Lenardic, A., Lee, C. T., Cao, W., Ribeiro, J.	INVITED: Coherence and Spectra Analysis of the USArray TA PY Posthole Test Array. **Vernon, F. L.**, Thomson, D. J.	Seismic Catalog of the Dominican Republic Period 2013-2016. **Polanco Rivera, E.**, Martinez, F., Pulliam, J., Huerfano, V.
11:15 A.M.	STUDENT: Full 3D Tomography Based on the Discontinuous Galerkin Method. **Wang, W.**, Chen, P.	Reliability and Repeatability in High Frequency Ground Motion Records. **Anthony, R. E.**, Ringler, A. R., Wilson, D. C., Hutt, C. R., Sandoval, L. D., Holland, A. A.	Seismic and Tsunami Hazard Assessment of Ecuador following Observations from the 2016 Mw7.8 Muisne Earthquake. **Malekmohammadi, M.**, Nikolaou, S., Toulkeridis, T.
11:30 A.M.	Advances in High Resolution Global Tomography of the Earth's Deep Mantle Using Numerical Wavefield Computations. **Romanowicz, B. A.**, Yuan, K., Masson, Y., Adourian, S., Karaoglu, H., French, S.	INVITED: Performance of Shallow Drill Emplaced Broadband USArray Seismic Stations. **Busby, R. W.**, Aderhold, K., Frassetto, A., Woodward, R. L.	"Sequencing" of Tsunami Waves, or Why the First Wave is Not Always the Largest. **Okal, E. A.**, Synolakis, C. E.

Thursday 20 April (*continued*)

Time	*Plaza Ballroom D*	*Plaza Ballroom E*	*Plaza Ballroom F*	*Governor's Square 14*
	Earthquake Complexities Revealed by Kinematic…	**Understanding and Modeling Ground…**	**The Future of Past Earthquakes**	**Verification and Validation of Earthquake…**
11:45 A.M.	STUDENT: Towards a Hybrid Broadband Ground Motion Simulation Model for Strong Earthquakes in the South Iceland Seismic Zone. **Sonnemann, T.**, Halldórsson, B., Hrafnkelsson, B., Mai, P. M., Papageorgiou, A. S., Jónsson, S.	Ground Motion Prediction Equation for Small-To-Moderate Earthquake Events in Texas, Oklahoma, and Kansas. **Zalachoris, G.**, Rathje, E. M.	INVITED: Using Displacement and Paleoclimate Data to Overcome Age Uncertainties in Rupture Histories of the Southern San Andreas Fault. **Scharer, K.**	Validation of Aftershock PSHA in Central Italy. **Gee, R.**, Peruzza, L., Pagani, M.
Noon–1:30 P.M.	Group Luncheon			
	Characterization of the Stress Field and Focal Mechanisms for Earthquake Source Physics and Fault Mechanics Session Chairs: Patricia Martínez-Garzón, Jeanne L. Hardebeck, Martha Savage, Marco Bohnhoff	**Recent Moderate Oklahoma Earthquakes: Widely Felt and Often Damaging** Session Chairs: William Yeck, Robert Williams, Justin Rubinstein	**Earthquake Geology and Paleoseismic Studies of the Intermountain West: New Methods and Findings on Seismic Hazard Characterization of Low Slip Rate Faults** Session Chairs: Seth Dee, Stephen Angster	**PSHA Source Modeling: Approaches, Uncertainty and Performance** Session Chairs: Peter Powers, Christie Hale
1:30 P.M.	INVITED: Heterogeneities of Stress and Strength and Their Relationship with Induced Seismic Activities Associated With the Tohoku-Oki Earthquake. **Yoshida, K.**, Matsuzawa, T., Hasegawa, A.	INVITED: Local Effort for Global Contribution: Seismic Observations of Recent Oklahoma Moderate Earthquake Sequences and for Future. **Nakata, N.**, Chen, X., Chang, J. C.	Paleoseismic Investigation of the Teton Fault at Leigh Lake. **Zellman, M.**, DuRoss, C. B.	STUDENT: PEER PSHA Code Verification Project. **Hale, C.**, Abrahamson, N., Bozorgnia, Y.
1:45 P.M.	What Makes Seismic Events Grow Big?: Insights from the Analysis of *b*-Value and Fault Roughness Variations During Laboratory Stick-Slip Experiments. **Goebel, T. H. W.**, Kwiatek, G., Becker, T. B., Dresen, G.	Diverse Earthquake Responses to Wastewater Disposal near Fairview, Pawnee, and Cushing, Oklahoma. **McGarr, A.**, Barbour, A.	INVITED: Paleoseismology of the Corner Canyon and Alpine Sites: Insight into Normal Fault Segmentation of the Wasatch Fault Zone. **DuRoss, C. B.**, Bennett, S. E. K., Briggs, R. W., Personius, S. F., Reitman, N. G., Hiscock, A. I., Mahan, S. A., Biasi, G. P.	INVITED: Some Sources of Modeling Uncertainty for Area Source Zones in Probabilistic Seismic Hazard Analysis. **Blanco, J. E.**, Hale, C. D., Quittmeyer, R., Kimball, J.

Time	*Governor's Square 15*	*Governor's Square 16*	*Governor's Square 12*
	Advances in Seismic Full Waveform Modeling, Inversion…	**Recent Advances in Very Broadband Seismology**	**Earthquakes and Tsunamis**
11:45 A.M.	Global Adjoint Tomography. **Ruan, Y.**, Lei, W., Lefebvre, M., Modrak, R., Smith, J. A., Orsvuran, R., Bozdag, E., Tromp, J.	STUDENT: Estimating Noise and Wave-Propagation Effects from a 3D Array at the Sanford Underground Research Facility. **Bowden, D. C.**, Tsai, V. C., Mandic, V., Pavlis, G., Prestegard, T., Meyers, P., Caton, R., Walls, L., Coughlin, M., Harms, J.	Improving Earthquake Resilience in Developing Countries through Seismology. **Onur, T.**, Gok, M. R., Mackey, K.
Noon–1:30 P.M.	Group Luncheon		
	Intraplate Earthquakes: Central and Eastern North America and Worldwide Session Chairs: Lillian Soto-Cordero, Christine Powell, Will Levandowski	**Toppled and Rotated Objects in Recent, Historic, and Prehistoric Earthquakes** Session Chairs: Klaus-G. Hinzen, Rasool Anooshehpoor	**Emerging Opportunities in Planetary Seismology** Session Chairs: Sharon Kedar, Steve Vance, Nicholas Schmerr
1:30 P.M.	INVITED: A New Paradigm for Large Earthquakes in Stable Continental Plate Interiors. **Calais, E.**, Camelbeeck, T., Stein, S., Liu, M., Craig, T. J.	Engineering Seismological Aspects of Toppled and Rotated Objects in Past and Recent Earthquakes. **Hinzen, K. G.**, Reamer, S. K.	Emerging Opportunities in Planetary Seismology. **Kedar, S.**, Schmerr, N., Vance, S. D.
1:45 P.M.	INVITED: Repeating Large Holocene Earthquakes in the Central and Eastern U.S. Warrant Continuing High Hazard Characterization. **Williams, R. A.**	STUDENT: Could the Collapse of a Massive Speleothem be the Record of a Large Paleoearthquake? Valentini, A., **Pace, B.**, Vasta, M., Ferranti, L., Colella, A., Vassallo, M., Montagna, P., Pons-Branchu, E.	INVITED: InSight/SEIS: One Year Prior to Beginning the Seismic Investigation of Mars. **Banerdt, W. B.**, Lognonné, P., Giardini, D., Pike, W. T., Christensen, U., de Raucourt, S., Umland, J., Hurst, K., Zweifel, P., Calcutt, S., Bierwirth, M., Mimoun, D., Pont, G., Verdier, N., Laudet, P., Hoffman, T., Clinton, J., Dehant, V., Golombek, M., Garcia, R., Johnson, C., Kedar, S., Knapmeyer-Endrun, B., Mocquet, A., Panning, M., Smrekar, S., Teanby, N., Tromp, J., Wieczorek, M., Weber, R. C., Bozdag, E., Beucler, E., Daubar, I., Drilleau, M., Kawamura, T., Murdoch, N., the INSIGHT/SEIS Team.

Thursday 20 April (*continued*)

Time	*Plaza Ballroom D*	*Plaza Ballroom E*	*Plaza Ballroom F*	*Governor's Square 14*
	Characterization of the Stress Field and Focal…	**Recent Moderate Oklahoma Earthquakes…**	**Earthquake Geology and Paleoseismic Studies…**	**PSHA Source Modeling: Approaches…**
2 P.M.	Delineating the Seismic Record of Off-Fault Deformation near the Southern San Andreas Fault Using Crustal Deformation Models. **Cooke, M. L.**, Beyer, J. L.	InSAR Constraints on Recent Induced Earthquakes in the United States. **Barnhart, W. D.**, Yeck, W. L.	Forecasting Large Earthquakes along the Wasatch Front, Utah: Final Results from the Working Group on Utah Earthquake Probabilities. **Wong, I.**, Lund, W., DuRoss, C., Thomas, P., Arabasz, W., Crone, A., Hylland, M., Luco, N., Olig, S., Pechmann J., Personius, S., Petersen, M., Schwartz, D., Smith, R.	INVITED: Exploring Source Modeling in the GEM Hazard Models Database. **Pagani, M.**, Garcia, J., Poggi, V., Styron, R., Weatherill, G., Gee, R.
2:15 P.M.	INVITED: STUDENT: Spatiotemporal Variations of Seismic B-Value along the North Anatolian Fault Zone in Northwest Turkey. **Raub, C.**, Martínez-Garzón, P., Kwiatek, G., Bohnhoff, M., Dresen, G.	Geodetic Slip Model of the M5.8 3 September, 2016 Pawnee, Oklahoma, Earthquake: Evidence for Fault Zone Collapse. **Pollitz, F. F.**, Wicks, C. W., Schoenball, M., Ellsworth, W. L., Murray, M.	Time-Dependent Probabilistic Hazard along the Wasatch Front, Utah Using the Working Group on Utah Earthquake Probabilities Model. **Thomas, P.**, Wong, I.	INVITED: Slab Models for PSHA. **LaForge, R.**, Hale, C.
2:30 P.M.	Using Coseismic Slip Models, Focal Mechanisms, and Topography to Constrain Seismogenic Stresses. **Hetland, E.** A., Hines, T. T., Medina Luna, L., Styron, R. H., Wilcox-Cline, R.	INVITED: Hidden Faults: Rupture of an Immature Fault System in the 2016 Mw5.8 Pawnee, OK Earthquake. **Keranen, K.**, Savage, H., Lohman, R., Atekwana, E., Stevens, N., Coffey, G., Sickbert, T., Peterson, D., Rabinowitz, H., Garcia, J. C., Lambert, C.	STUDENT: Estimating Rates of Slip within the Central Walker Lane Using Multiple Geochronometers. **Angster, S. J.**, Wesnousky, S. G., Owen, L. A.	INVITED: Parameterizing Directivity in PSHA. **Watson-Lamprey, J.**
2:45–4 P.M.	Pint and Poster			
	Characterization of the Stress Field and Focal Mechanisms for Earthquake Source Physics and Fault Mechanics (continued)	**Induced Seismicity—The European Perspective** Session Chairs: Manfred Joswig, Joshua White, Mariano Garcia-Fernandez	**Seismotectonics** Session Chairs: Rich Briggs, Gavin Hayes	**PSHA Source Modeling: Approaches, Uncertainty and Performance** (continued)
4 P.M.	INVITED: Imaging Rupture Threshold Variations along Subduction Faults. **Bletery, Q.**, Thomas, A. M., Rempel, A. W.	INVITED: Hydrocarbon Induced Seismicity in Northern Netherlands. **Dost, B.**, Spetzler, J., Ruigrok, E.	**DISCUSSION**	INVITED: Epistemic Uncertainty in the National Seismic Hazard Mapping (NSHM) Project Models. **Lee, Y.**, William, G., Hu, Z.

Time	*Governor's Square 15*	*Governor's Square 16*	*Governor's Square 12*
	Intraplate Earthquakes: Central and Eastern North America and…	**Toppled and Rotated Objects in Recent, Historic…**	**Emerging Opportunities in Planetary Seismology**
2 P.M.	INVITED: The Geodynamics of Intraplate Stresses within Central and Eastern North America. **Holt, W. E.**, Ghosh, A., Wang, X.	Fragile Geologic Features in Coastal California. **Stirling, M. W.**, Rood, D. H., Caklais, A., Madugo, C. L. M., Abrahamson, N. A.	Investigating the Interior of Icy Worlds with Short Aperture Seismic Arrays. **Schmerr, N.**, Lekic, V., Panning, M., Hurford, T., Rhoden, A., Garnero, E., Yu, H.
2:15 P.M.	Evidence for Hydrous Mantle beneath the New Madrid Seismic Zone: A Potential Explanation for an Intraplate Enigma. **Powell, C. A.**, Levandowski, W.	STUDENT: The Ruin of the Roman Temple of Kedesh, Israel; Example of a Precariously Balanced Archaeological Structure Used as a Seismoscope. **Schweppe, G.**, Hinzen, K. G., Marco, S., Reamer, S. K., Fischer, M.	INVITED: A Broadband Silicon Seismic Package for Planetary Exploration. **Pike, W. T.**, Standley, I. M., Calcutt, S., Kedar, S.
2:30 P.M.	INVITED: Control of the Lithospheric Mantle on Intracontinental Deformation: Revival of Eastern U.S. Tectonism. **Biryol, C. B.**, Wagner, L. S., Fischer, K. M., Hawman, R. B.	**DISCUSSION**	INVITED: Development of a Planetary Broadband Seismometer for Geophysical Exploration of the Moon and the Ocean World. Chui, T. C. P., Griggs, C. E., Moody, M. V., Paik, H. J., **Kedar, S.**, Hahn, I., Williamson, P., Schmerr, N., Banerdt, W., Neal, C., Vance, S.
2:45–4 P.M.	Pint and Poster		
	Intraplate Earthquakes: Central and Eastern North America and Worldwide (continued)	**Fault Mechanics and Rupture Characteristics from Surface Deformation** Session Chairs: Lia Lajoie, Kendra Johnson, Edwin Nissen	**Importance of Long-Period Ground Motions in Seismic Design of Structures** Session Chairs: Erdal Safak, Eser Cakti
4 P.M.	The January 2017 Barrow Strait Earthquake Sequence, Arctic Canada. **Bent, A. L.**, Ackerley, N., Kolaj, M., Adams, J.	Managing the Explosion of High Resolution Topography for Active Fault Research. **Arrowsmith, J. R.**, Crosby, C. J., Gross, B., Nandigam, V., Phan, M.	Observed and Calculated Response of Long-Period Structures to Surface Waves. **Safak, E.**, Cakti, E.

Thursday 20 April (*continued*)

Time	*Plaza Ballroom D*	*Plaza Ballroom E*	*Plaza Ballroom F*	*Governor's Square 14*
	Characterization of the Stress Field ...	**Induced Seismicity—The European Perspective**	**Seismotectonics**	**PSHA Source Modeling: Approaches...**
4:15 P.M.	Correlations Between Stress Orientation and Seismic Coupling in Subduction Zones. **Hardebeck, J. L.**, Loveless, J. P.	Mitigating Induced Seismicity While Optimizing Production/Injection Strategy of Gas Fields. Chitu, A., Leeuwenburgh, O., **Candela, T.**, Kraaijpoel, D., Wassing, B.	STUDENT: New Bedrock Evidence for Overall Offset on N-S Faults in the Vicinity of Historic Earthquakes in Little San Bernardino Mtns; Implications for Interactions Between the San Andreas Fault and the Eastern California Shear Zone. **Hislop, A.**, Powell, R. E., Moecher, D. P., Bemis, S. P.	Modeling Virtual Faults in PSHA. **Campbell, K. W.**, Gupta, N.
4:30 P.M.	Constraining Uncertainties of Stress Tensor Inversion with Data-Driven Focal Mechanism Cluster Analysis. **Specht, S.**, Heidbach, O., Cotton, F., Zang, A.	3D Mechanical Analysis of Complex Reservoirs for Induced Seismicity: A Novel Numerical Approach. **van Wees, J. D.**, Pluymaekers, M., Van Thienen-Visser, K., Osinga, S., Wassing, B., Fokker, P. A., Candela, T.	The Seismologically Detected Taan Fiord Landslide and Tsunami of 17 October 2015: Preliminary Findings. **Haeussler, P. J.**, Stark, C. P., Gulick, S. P. S., MacInnes, B., Shugar, D., Weiss, R., Higman, B., Larsen,, C., Bloom, C., Bilderback, E., Dufresne. A., Ekstrom, G., Geertsma, M., Gualtieri, L., Jaffe, B., Koppes, M., Labay, K., Loso, M., Lynett, P., McCall, N., Richmond, B., Reece, B., Venditti, J., Walton, M., Willis, M., Williams, H.	UCERF3 Implementation for Site-Specific Probabilistic Seismic Hazard Analysis. **Altekruse, J. M.**, LaForge, R., Ostenaa, D. A., El Menchawi, O.
4:45 P.M.	A Refined Methodology for Stress Inversions of Earthquake Focal Mechanisms. **Martínez-Garzón, P.**, Ben-Zion, Y., Abolfathian, N., Kwiatek, G., Bohnhoff, M.	INVITED: Recent Seismicity in the Northern German Gas Fields—Induced and Tectonic? **Joswig, M.**	Moho Temperature and Compositional Controls on Lithospheric Bending Strength in the Western United States. **Schutt, D. L.**, Lowry, A. R., Buehler, J. S.	Probabilistic Fault Displacement Hazard Analyses – Evaluation of Empirical Relationships for Fault Displacement. **Wells, D. L.**
5 P.M.	STUDENT: Spatio-Temporal Variations of Stress Parameters in the San Jacinto Fault Zone. **Abolfathian, N.**, Martínez-Garzón, P., Ben-Zion, Y.	INVITED: Monitoring an Underground Gas Storage in a Seismic Area: The Case of Collalto (Northeastern Italy). **Priolo, E.**, Romano, M. A., Garbin, M., Romanelli, M., Plasencia, M., Peruzza, L., Grigoli, F.	Meager Mountain Seismicity—Magmatic or Not? **Mulder, T.**	Incorporating Uncertainty in Kernel Density Models of Distributed Seismicity into Hazard Assessments. Montaldo Falero, V., Youngs, R., **Arcos, M.**, Hollenback, J.

Time	*Governor's Square 15*	*Governor's Square 16*	*Governor's Square 12*
	Intraplate Earthquakes: Central and Eastern...	**Fault Mechanics and Rupture Characteristics...**	**Importance of Long-Period Ground Motions in Seismic Design...**
4:15 P.M.	New Constraints on the Late Quaternary Slip Rate of the Cheraw Fault, Southeastern Colorado. **Zellman, M.**, Ostenaa, D. A., Mahan, S. A., Briggs, R. W., DuRoss, C. B., Reitman, N. G., Personius, S. F., Morgan, M. L.	Shallow Fault Physics Constrained by Active-Source Seismic Imaging, Fault-Zone Drilling, and Mechanical Testing. **Nevitt, J.**, Brooks, B., Catchings, R., Lockner, D., Moore, D., Goldman, M., Criley, C., Bennett, M., Sickler, R., Minson, S., Glennie, C., Ericksen, T., Chan, J.	Use of 3D Physics-Based Numerical Simulations in the Development of Long Period Ground-Motion Maps for Los Angeles. **Crouse, C. B.**, Jordan, T., Milner, K., Goulet, C., Graves, R.
4:30 P.M.	Faults and Lineaments of the St. Lawrence Rift System. **Lamontagne, M.**, Nadeau, L., Brouillette, P., Bédard, M. P., Grégoire, S.	Characterizing Near-Surface Fractures in Radar Interferograms. **Parker, J. W.**, Donnellan, A., Glasscoe, M. T.	Highlights of Recorded Responses of Two Tall Buildings to Long-Period Earthquake Motions from Distant Sources. **Celebi, M.**
4:45 P.M.	Eastern Tennessee Seismic Zone Paleoseismology—Alignment of Faults Displacing Quaternary Sediments, and Bedrock, and Liquefaction Features, Confirm Strong Earthquakes in the Past 15 ka. Cox, R. T., **Hatcher, R. D.**, Glasbrenner, J. C., Counts, R., Gamble, E., Warrell, K. F.	Statistically Preferred Hypocenter Location, Slip Variability, and Surface Rupture Patterns from Fractally Rough Fault Structure. **Allam, A. A.**, Kroll, K. A., Milliner, C. W. D., Richards-Dinger, K.	STUDENT: Effects of Simulated Magnitude 9 Earthquake Motions on Structures in the Pacific Northwest. **Marafi, N. A.**, Berman, J. W., Eberhard, M. O., Wirth, E. A., Frankel, A. D., Vidale, J. E.
5 P.M.	**DISCUSSION**	Epistemic Uncertainty in Thrust Fault Slip as Revealed by 62 Vertical Offsets along the Cucamonga Fault. **McPhillips, D.**, Scharer, K., Lindvall, S. C.	Significant Duration of Earthquake Ground Motion for Subduction Zone Earthquakes. **Walling, M. A.**, Abrahamson, N. A.

Thursday 20 April (*continued*)

Poster Sessions

Recent Moderate Oklahoma Earthquakes: Widely Felt and Often Damaging.

1. Vs30 from Multi-Method Site Characterization Approach at Seismograph Locations in the Fairview, Oklahoma Region. **Stephenson, W. J.**, Odum, J. K., McNamara, D. E., Williams, R. A.
2. Brune Stress Parameter Estimates For The 2016 Mw5.8 Pawnee And Other Oklahoma Earthquakes. **Cramer, C. H.**
3. Regional Moment Tensor Inversion – Creation of a Defensible Velocity Model for Inversion. **Herrmann, R. B.**, Benz, H. M.
4. STUDENT: MyShake: Smartphone-Based Detection and Analysis of Oklahoma Earthquakes. **Kong, Q. K.**, Allen, R. M., Schreier, L.
5. Poroelastic Properties of the Arbuckle Group in Oklahoma Derived from Well Fluid Level Response to the Mw5.8 Pawnee and Mw5.0 Cushing Earthquakes. **Kroll, K. A.**, Cochran, E. S., Murray, K. E.
6. STUDENT: Understanding the Roles of Fluid and Faulting in Earthquake Sequences Using Data from Central Oklahoma. **Pennington, C. N.**, Chen, X., Abercrombie, R., Haffener, J. A., McMahon, N. D.

Induced Seismicity—The European Perspective.

7. Modeling Induced Seismicity by Gas Depletion in a Postglacial, Prestressed Regime. **Li, G.**, Joswig, M.
8. Forecasting Magnitude Frequencies and Magnitude Occurrence Probabilities Using the Seismogenic Index Model—Application to Production and Injection Operations in Hydrocarbon and Geothermal Reservoirs. **Dinske, C.**, Shapiro, S. A.
9. Underground Seismic Monitoring and Seismic Hazard Assessment in Bobrek Coal Mine, Poland with the Use of Flameproof Seismic Observation System SOS. **Lurka, A.**, Mutke, G.

Understanding and Modeling Ground Motions and Seismic Hazard from Induced Earthquakes.

10. Comparison of the USGS 2016 and 2017 One-Year Seismic Hazard Forecasts for the CEUS with a Focus on Oklahoma. **Hoover, S. M.**, Moschetti, M. P., Petersen, M. D., Mueller, C. S.
11. Access to "Did You Feel It?" Data for Induced Earthquake Studies. **Quitoriano, V.**, Thompson, E. M., Smoczyk, G., Wald, D. J.
12. STUDENT: The Contribution of Uncertainty in Magnitude and Location to Near-Distance Variability in Ground Motions for Potentially-Induced Earthquakes in Oklahoma. **Holmgren, J. M.**, Atkinson, G. M.
13. Scaling Rotational and Translational Ground Motion Parameters from Induced Seismic Events. **Zembaty, Z.**, Mutke, G., Nawrocki, D.
14. STUDENT: Empirical Ground Motion Characterization of Induced Seismicity in Alberta and Oklahoma. **Novakovic, M.**, Atkinson, G. M., Assatourians, K.
15. Processed Ground-Motion Records for Induced Earthquakes for Use in Engineering Applications. **Assatourians, K.**, Atkinson, G.

The Future of Past Earthquakes .

16. A Late Cenozoic Kinematic Model for Fault Motion within the Greater Cascadia Subduction System. **McCrory, P. A.**, Wilson, D. S.
17. Increased Late Quaternary Slip Rates in the Southern Lower Rhine Graben, Central Europe. **Gold, R. D.**, Friedrich, A., Kuebler, S., Salamon, M.
18. STUDENT: A New Slip Rate for the West Tahoe Fault and the Age of Glacial Deposits Using Cosmogenic 10Be Near Lake Tahoe, California. **Pierce, I. K. D.**, Wesnousky, S. G., Kent, G., Owen, L. A.
19. Quaternary Active Tectonic Deformation of the Transgressive Surface Offshore Ventura, CA, Constrained by New Geophysical Data. **Perea, H.**, Ucarkus, G., Driscoll, N., Kent, G., Rockwell, T.
20. A 200 Ka Paleoseismic Record of Earthquake-Triggered Slumps and Soft Sediment Deformation in the Dead Sea Basin. **Marco, S.**, Alsop, G. I., Levi, T., Kagan, E. J., Stein, M., Weinberger, R.
21. Paleoseismic Interpretation of Past Earthquakes Validated by Long Historical Records Argue for Large Scale Regional or Fault Interaction. **Rockwell, T. K.**, Biasi, G.
22. Century-Long Paleo-Seismic Hiatus in California and New Zealand. **Jackson, D. D.**
23. Variations in Surface Fault Rupture Recurrence and Seismic Moment Release in the San Francisco Bay Region During the Past Four Centuries. **Schwartz, D. P.**
24. Earthquake Forecast For The Wasatch Front Region by the Working Group on Utah Earthquake Probabilities: Final Results. **Wong, I.,** Lund, W., DuRoss, C., Thomas, P., Arabasz, W., Crone, A., Hylland, M., Luco, N., Olig, S., Pechmann, J., Personius, S., Petersen, M., Schwartz, D., Smith, R.
25. Constraining the Potential for Early Repeats and Clustering Using Historical and Paleoseismological Data. **Fitzenz, D. D.**, Nyst, M., Kane, D.
26. Evaluating the Relationship Between the Entiat Earthquake Cluster and the 1872 Chelan Earthquake, Central Washington State. **Brocher, T. M.**, Cakir, R.
27. Resolving 1906 Meihsan M7.1, Taiwan, Earthquake Using Historical Waveforms: Blind Thrust Faulting Mechanism with Observed Strike-Slip Surface Rupture. **Ma, K.**, Liao, Y., Hsieh, M.
28. The Future of the Past and Present Earthquake of Padangpanjang on June 28, 1926, West Sumatera, Indonesia. **Soehaimi, A. S.**, Wafid, M. W., Sulistyawan, I. H. S.
29. STUDENT: Neotectonic and Seismicity Assessment of the 1961 Kara Kore Earthquake in the Marginal Grabens of the Afar Rift (Ethiopia). **Stockman, M. B.**, Polun, S. G., Gomez, F., Tesfaye, S.
30. Luminescence Dating for Paleoseismic Reconstructions: A Practical Guide to New Technology, Applications and Sampling Methods. **Rittenour, T. M.**
31. Fault Zone Landforms and Paleoseismology. **Arrowsmith, J. R.**, Salisbury, J. B., Zielke, O.
32. High Resolution DTM Reveals Tectonic Signal of the Dead Sea Fault at the Ateret Archaeological Site. Marco, S., **Hinzen, K. G.**
33. STUDENT: Constraining the Holocene Extent of the Meers Fault, Oklahoma Using High-Resolution Topography and Paleoseismic Trenching. **Hornsby, K. T.**, Streig, A. R., Bennett, S. E. K., Chang, J. C.
34. Evidence for Prehistoric Earthquakes on the Southern Fairweather Fault in Trenches across the 1958 Surface Rupture, Glacier Bay National Park, Alaska. **Witter, R. C.**, Scharer, K., DuRoss, C. B., Bender, A. M., Haeussler, P. J., Lease, R.
35. Paleoseismic Results from Excavations across the Surface Rupture Associated with the 2014 South Napa Earthquake. **Prentice, C. S.**, Sickler, R. R., Scharer, K., DeLong, S. B., Hecker, S., Lienkaemper, J. J., Pickering, A.
36. STUDENT: Testing the Shorter and Variable Recurrence Interval Hypothesis along the Cholame Section of the San Andreas Fault. **Williams, A. M.**, Arrowsmith, J. R., Rockwell, T. K., Akciz, S. O., Grant-Ludwig, L.
37. Investigating the History of Large Wasatch Fault Earthquakes along the Fort Canyon Fault at the Traverse Ridge Paleoseismic Site. **Toke, N. A.**, Langevin, C., Phillips, J., Kleber, E. J., DuRoss, C. B., Wells, J. D., Horns, D. M., McDonald, G., Carlson, J. K.

Earthquake Complexities Revealed by Kinematic and Dynamic Modeling and Multiple Geophysical Data Sets.

38. STUDENT: Mach Wave Coherence in the Presence of Source and Medium Heterogeneity. **Vyas, J. C.**, Mai, P. M., Galis, M., Dunham, E. M., Imperatori, W.
39. STUDENT: The Spatial Interdependence of Kinematic Rupture Parameters as Evidenced by Dynamic Ruptures on Rough Faults. **Thingbaijam, K. K. S.**, Galis, M., Vyas, J. C., Mai, P. M.
40. Complex Slip Distributions on Complex Fault Geometries. **Herrero, A.**, Murphy, S.
41. Dynamic Models of Earthquake Rupture along Branch Faults of the Eastern San Gorgonio Pass Region in CA Using Complex Fault Structure. **Douilly, R.**, Oglesby, D. D., Cooke, M. L., Beyer, J. L.
42. Modeling Earthquake Rupture and Corresponding Tsunamis along a Segment of the Alaskan-Aleutian Megathrust. **Ryan, K. J.**, Geist, E. L., Oglesby, D. D., Kyriakopoulos, C.
43. Simulating Impacts of Rupture Variability on Near-Fault Strong Motions. **Graves, R. W.**
44. Strong Motion Simulation of the 2016 Kumamoto Earthquake (Mw7.0) Using Pseudo Point-Source Model and Empirical Green's Functions. **Nagasaka, Y.**, Nozu, A.
45. Joint Inversion of Continuous GPS, InSAR and Seismicity Data to Constrain the Spatiotemporal Evolution of Strain Release of the 2016 Kumamoto Earthquake Sequence: Implications for the Shallow Slip Deficit and the Role of Aseismic Slip. **Milliner, W. D.**, Burgmann, R., Wang, T., Inbal, A., Liang, C., Fielding, E.
46. Finite Rupture Process and Ground Shaking of the 2014 Mw5.1 La Habra Earthquake. **Wei, S. W.**, Fielding, E., Graves, R., Wang, T., Helmberger, D. V.
47. STUDENT: Three-Dimensional Multi-Episode Directivity Analysis for Complex Ruptures. **Park, S.**, Ishii, M.
48. STUDENT: Investigation of Back-Projection Uncertainties with M6 Earthquakes. **Fan, W.**, Shearer, P. M.

Earthquakes and Tsunamis.

49. STUDENT: Caribbean Regional Tsunami Early Warning Using W-Phase Source Inversion. **Casallas, I.**, Huérfano, V., Rivera, L.
50. Tsunamis Obey Snell's Law: Simulations and Real Data. **Okal, E. A.**, Synolakis, C. E.

Seismotectonics.

51. Seismic Evidence for Splays of the Eureka Peak Fault beneath Yucca Valley, California. **Goldman, M. R.**, Catchings, R. D., Chan, J. H., Sickler, R. R., Criley, C. J., O'Leary, D. R., Christensen, A. H.
52. From Slab to Peak: A Summary of Recent Seismic Advancements to Understanding Llaima Volcano, Chile. **Bishop, J. W.**, Mikesell, T. D., Lees, J. M., Rodd, R., Biryol, C. B., Franco, L.
53. STUDENT: A New Method for Statistical Assessment of Shear Wave Splitting Measurements. **Witt, D. R.**, Corbalon Castejon, A., Breidt, F. J., Schutt, D. L., Aster, R. C.

PSHA Source Modeling: Approaches, Uncertainty and Performance.

54. Approach for Modeling Creep in Probabilistic Seismic Hazard Analysis. **Wooddell, K. E.**, Abrahamson, N. A.
55. Modeling Background Seismicity in Japan. **Porto, N. M.**, Williams, C.
56. Sensitivity of Hazard to Gridded Seismicity Source Modeling. **Powers, P. M.**

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57. Student: On the Sensitivity of Various Distance Metrics to the Uncertainties of Fault Rupture Model Parameters. **Farhadi, A.**, Pezeshk, S.
58. Student: Upper Bounds of Sensitivities in Seismic Hazard Analysis. **Molkenthin, C.**, Scherbaum, F., Griewank, A., Leovey, H., Kucherenko, S., Bora, S. S., Cotton, F.
59. Mean Seismic Hazard and Uncertainty Analysis Based on the UCERF3 Geologic Slip Rate Uncertainty Model for California. **Zeng, Y.**
60. Comparing Seismic Hazard Calculated with the 2014 USGS NSHM at Select Sites in the US at Different Periods and Site Classes. **Shumway, A. M.**, Powers, P. M., Petersen, M. D., Rezaeian, S.
61. Seismic Hazard, Risk, and Design for South America. **Petersen, M. D.**, Harmsen, S. C., Jaiswal, K. S., Rukstales, K. S., Luco, N., Haller, K. M., Mueller, C. S., Shumway, A. M.

Recent Advances in Very Broadband Seismology.

62. A New Range of Direct Bury Instruments, from Very Weak to Strong Motion Sensors. **Moores, A.**, Parker, T., Bainbridge, G., Townsend, B.
63. New Instrumantation for Measuring Acceleration, Pressure, and Temperature (APT) with Wide Dynamic Range and Bandwidth. **Heesemann, M.**, Davis, E. E., Paros, G., Johnson, G.
64. Early Results from the Borehole Very Broad Band Seismometer Development Program. **Steim, J.**, Hutt, C. R., Ringler, A. T., Freudenmann, R.
65. Co-Located Broadband Ground Motion Similarity During Moderate Shaking from 100 to 400 s Period. **Ringler, A. T.**, Storm, T., Anthony, R. E., Wilson, D. C., Holland, A. A.
66. Verification Testing of Trillium 360 - A New Seismometer for Global Seismology. **Bainbridge, G.**, Upadhyaya, S., Townsend, B., Moores, A.
67. Event Based Seismic Station and Network Quality Analysis for Temporary Deployments. **Wilson, D. C.**, Holland, A. A., Ringler, A. T., Storm, T. L.
68. Student: Detection of Low Magnitude Intermediate Depth Earthquakes from Bucaramanga Nest Across Dense Surface Seismic Array. **Alalli, G. A.**, Beroza, G. B.
69. Student: Mitigation of P-Wave Reverberations in Teleseismic Earthquake Signals Observed with Floating-Platform Seismographs. **Baker, M. G.**, Aster, R. A., Wiens, D., Nyblade, A., Stephen, R. A., Bromirski, P., Gerstoft, P.
70. Portable Array Deployment in the Zevulun Valley (Haifa Bay), Israel - Ground Motions and Amplifications. Shani-Kadmiel, S., Volk, O., Gvirtzman, Z., **Tsesarsky, M.**

Advances in Seismic Full Waveform Modeling, Inversion and Their Applications.

71. Finite-Difference Algorithm for 3D Orthorhombic Elastic Wave Propagation. **Preston, L. A.**, Jensen, R. P., Aldridge, D. F.
72. Far-Field Seismic Signals from Coupled Nonlinear-To-Linear Propagation Codes. **Preston, L.A.**, Hilbun, W.
73. Student: 3D Passive-Source Reverse Time Migration Imaging of the Mantle Transition Zone in the Yellowstone Region. **Li, J.**, Shen, Y.
74. Student: Nonlinear Moment Tensor Inversion of the Envelopes and Cumulative Energy of Regional Seismic Waveforms. **Dahal, N. R.**, Ebel, J. E.
75. Moon, S., Meng, L., Yong, A., Martin, A., Davis, P. M.
76. Using Exponentiated Phase in Regional and Global Seismic Tomography. **Yuan, Y. O.**, Bozdag, E., Simons, F. J., Gao, F.
77. Full-Wave Velocity and Attenuation Sensitivities of Seismic Waves Based on the Scattering-Integral Method. **Wang, N.**, Shen, Y., Bao, X. Y., Li, J. H., Zhang, W.
78. Student: Attenuation of High Frequency Body Waves in the New Madrid Seismic Zone. **Sedaghati, F.**, Pezeshk, S., Nazemi, N.
79. Student: Attenuation of Lg Waves in the New Madrid Seismic Zone Using Coda Normalization Method. **Nazemi, N.**, Pezeshk, S., Sedaghati, F.
80. Student: Lg Attenuation in Oklahoma and Its Surrounding Regions. **Al Noman, M. N.**, Cramer, C. H.

Characterization of the Stress Field and Focal Mechanisms for Earthquake Source Physics and Fault Mechanics.

81. Analysis and Stress Modeling of the March 21, 2009 (M=4.8) and September 26, 2016 (M=4.3) Bombay Beach Earthquake Swarms. **Simila, G.**
82. The State of Stress at Intermediate Scales. **Delorey, A. A.**, Maceira, M., Syracuse, E. M., Coblentz, D., Guyer, R. A., Johnson, P. A.
83. Relative P- and S-Wave Amplitudes at Close Stations near the San Jacinto Fault Zone Dictated by Focal-Mechanism. **Kilb, D.**, Buehler, J., Vernon, F. L., Sundstrom, A. B., Sahakian, V., Hanks, T.
84. Student: Seismotectonic Setting of the Marmara Segment of the North Anatolian Fault Zone from Local Stress Inversion Based on a Refined High Precision Hypocenter Catalogue (2006-2016). **Wollin, C.**, Bohnhoff, M., Martínez-Garzón, P., Küperkoch, L.
85. Student: Analysis of In-Situ Stress during EGS Development at The Geysers Geothermal Field, California. **Boyd, O. S.**, Dreger, D. S., Gritto, R.
86. Microseismic Event Relocation Based on PageRank Linkage at the Newberry Volcano Geothermal Site. **Aguiar, A. C.**, Myers, S. C.
87. Student: Characterizing Recent Northern Walker Lane Earthquake Sequences: Complexities in Geometry and Source Processes. **Hatch, R. L.**, Abercrombie, R. E., Trugman, D., Smith, K. D., Shearer, P. M., Ruhl, C.
88. Student: Conveying Uncertainties of Focal Mechanism Parameters on Focal Spheres: Probability Densities of Compressional and Tensional Axes. **Mejia, H. P.**, Pulliam, R. J., Huerfano, V., Polanco, E.
89. Student: Understanding Resolution and Uncertainties of Stress Drops of Repeating Earthquakes at Parkfield. **Zhang, J.**, Chen, X., Abercrombie, R. E.

Intraplate Earthquakes: Central and Eastern North America and Worldwide.

90. Magnitudes at Close and Very Close Distances in Eastern Canada. **Bent, A. L.**
91. Student: Effectiveness of Subspace Detectors to Assess the Occurrence of Repeating Earthquakes and to Lower the Magnitude Threshold in the Mid-Atlantic US. **Soto-Cordero, L.**, Meltzer, A., Stachnik, J. C.
92. Improving Earthquake Detection in New England (USA). Frank, W. B., **Abercrombie, R. E.**
93. Intensity Correlations with Regional Q, Stress Drop, and Induced and Natural Seismicity in the Central US. **Cramer, C. H.**
94. Magnitude Estimates for the 1811-1812 New Madrid Seismic Zone Using Large Scale Numerical Simulations: Implications for the Seismic Hazard in Urban Areas around the Mississippi Embayment. Somerville, P. G., Skarlatoudis, A., **Hosseini, M.**, Bayless, J., Thio, H. K.
95. Eastern North America Passive Margin Earthquakes and Mesozoic Rift Structures. **Ebel, J. E.**, Chapman, M. C.
96. Student: Constraining the Northern Boundary of the Charleston Uplift Using Seismic Reflection Methods. **Rucker, C.**, Woolery, E.

Theoretical and Methodological Innovations for 3D/4D Seismic Imaging of Near-surface, Crustal, and Global Scales.

97. Student: Construction of Coherent Fréchet Kernels for Full-3D Tomography. **Juarez, A.**, Jordan, T.
98. Student: High Resolution Shear-Wave Velocity Structure of Greenland from Earthquake and Ambient Noise Surface Wave Tomography. **Pourpoint, M.**, Anandakrishnan, S., Ammon, C. J.
99. Ambient Noise Tomography of Azerbaijan. **Chiang, A.**, Gok, R., Kazimova, S., Prieva, L., Feng, L., Mellors, R. J., Yetirmishli, G.
100. Reverberant S-Waves on a Floating Ice Shelf: Temporal Monitoring of the Ross Ice Shelf Using Ambient Noise Cross-Correlations. **Chaput, J. A.**, Aster, R. C., Anthony, R., Baker, M., Wiens, D., Nyblade, A., Gerstoft, P., Bromirski, P., Stephen, R.
101. Student: P and S Body Wave Tomography of the West Antarctic Rift System: Evidence for Cenozoic Rifting? **Soto, D.**, Nyblade, A., Anandakrishnan, S., Aster, R., Wiens, D., Huerta, A., Winberry, J., Wilson, T.
102. Student: Internal Structure of the San Jacinto Fault Zone at Dry Wash from Data Recorded by a Dense Linear Array. **Qiu, H.**, Ben-Zion, Y., Ross, Z. E., Share, P. E., Vernon, F.
103. Student: Internal Structure of the San Jacinto Fault Zone in The Trifurcation Area Southeast of Anza, California, from Data of Dense Seismic Arrays. **Qin, L.**, Ben-Zion, Y., Qiu, H., Share, P. E., Ross, Z., Vernon, F. L.
104. Student: High-Resolution Body Wave Tomography of the Ross Sea Embayment, Antarctica. **White-Gaynor, A.**, Nyblade, A., Wiens, D., Aster, R., Bromirski, P. D., Gerstoft, P., Stephen, R. A.
105. Student: Three-Dimensional Vp/Vs Tomography with Body and Surface Wave Data. **Hongjian, F.**, Haijiang, Z., Huajian, Y., Yehuda, B.
106. Basin-Wide Vp, Vs, Vp/Vs, and Poisson's Ratios of the Napa Valley, California. **Catchings, R. D.**, Goldman, M. R., Chan, J. H., Sickler, R. R., Strayer, L. M., Boatwright, J., Criley, C. J.
107. The 2016 East Bay Seismic Investigation: Seismic Tomography Imaging across the Hayward Fault Zone near San Leandro, California. **Strayer, L. M.**, Catchings, R. D., McEvilly, A. T., Chan, J. H., Goldman, M. R., Criley, C. J., Richardson, I., Sickler, R. R.
108. Southcentral Mexico 3D Velocity Model. **Ramirez-Guzman, L.**, Juarez-Zuñiga, A., Contreras Ruiz Esparza, M. G.
109. Active Lesser Himalayan Duplex: Constraints from Velocity Structure and Regional Waveform Inversion. **Negi, S. S.**, Paul, A., Cesca, S., Kamal, K., Kriegerowski, M., Mahesh, P., Gupta, S.
110. Student: Eikonal Tomography of the Southern California Plate Boundary Region. **Qiu, H.**, Ben-Zion, Y., Zigone, D., Lin, F. C.
111. Frequency Dependence of Attenuation in the Crust beneath Southern California. **Lin, Y. P.**, Jordan, T. H.
112. Student: Receiver Function Analysis of Geologic Structures in [WITHDRAWN] States. **Glover, C. O.**, Powell, C. A., Langston, C. A., Cox, R. T.

Toppled and Rotated Objects in Recent, Historic, and Prehistoric Earthquakes.

113. Rectangular Blocks vs Polygonal Walls in Archaeoseismology. **Hinzen, K. G.**, Montabert, A.
114. Invited: Earthquake Rotated Objects Associated with Ground Motion during the Mw 6.0 2016 Amatrice (Central Italy) Earthquake. **Cucci, L.**, Tertulliani, A., Lombardi, A. M.

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Fault Mechanics and Rupture Characteristics from Surface Deformation.

115. Spatial Distribution of Surface Displacements in the 1983 M 6.9 Borah Peak Earthquake and Prehistoric Ruptures of the Warm Springs and Thousand Springs Sections of the Lost River Fault Zone. **DuRoss, C. B.**, Bunds, M. P., Reitman, N. G., Gold, R. D., Personius, S. F., Briggs, R. W., Toké, N. A., Johnson, K., Lajoie, L.

Importance of Long-Period Ground Motions in Seismic Design of Structures.

116. Examples of Observed Response of Tall Structures in Istanbul to Long-Distance Earthquakes. **Cakti, E.**, Safak, E., Dar, E.
117. Student: Evaluation of Accidental Eccentricity in Symmetric Buildings Due to Wave Passage Effects in the Near-Fault Region. **Cao, Y.**, Mavroeidis, G. P., Meza-Fajardo, K. C., Papageorgiou, A. S.

Earthquake Geology and Paleoseismic Studies of the Intermountain West: New Methods and Findings on Seismic Hazard Characterization of Low Slip Rate Faults.

118. Student: Characterizing the Quaternary Expression of Active Faulting along the Olinghouse, Carson, and Wabuska Lineaments of the Walker Lane. **Pierce, I. K. D.**, Angster, S. J., Li, X., Huang, W., Wesnousky, S. G.
119. Insights into the Seismogenic Relation between the West Valley and Wasatch Fault Zones, Utah - New Data from the Airport East Trench Site. Hylland, M. D., **Hiscock, A. I.**, McDonald, G. N.
120. Refining the Rupture Length of the MRE and Timing of the Penultimate Earthquake along the Simpson Park Mountains Fault, Central Great Basin Nevada. **Koehler, R. D.**
121. Kinematic Observations of the Manastash Ridge and Boylston Ridge; Implications for Connectivity between Primary Structures in the Yakima Fold and Thrust Province, Washington. **Ladinsky, T. C.**, Blakely, R. J., Sherrod, B. L., Staisch, L., Kelsey, H. M.
122. A Decade of USGS Seismic Monitoring of the Teton Fault. **Holland, A. A.**, McNamara, D. E., Wilson, D. C., Benz, H. M.

Verification and Validation of Earthquake Occurrence and Hazard Forecasts.

123. Invited: USGS Research toward Validation of the 2016 Earthquake Hazard Forecast. **McNamara, D. E.**, Petersen, M., Hanks, T., Rubinstein, J.
124. A Comparison between the Forecast by the United States National Seismic Hazard Maps with Recent Ground Motion Records. **Mak, S.**
125. Recent Achievements of the Collaboratory for the Study of Earthquake Predictability. Werner, M. J., **Jackson, D. D.**, Marzocchi, W., Rhoades, D. R., Schorlemmer, D., Zechar, J. D., Maechling, P., Silva, F., Jordan, T. H.
126. Updates of the ISC-GEM Global Instrumental Earthquake Catalogue: Status after Three Years of the Extension Project. **Di Giacomo, D.**, Engdahl, E. R., Storchak, D. A., Harris, J.