



2022

SZ4D

COMMUNITY MEETING

November 14-16, 2022 | Houston, TX
preceded by an Early Career Event on November 13

in person and online



ORGANIZING COMMITTEE

Mark Behn (Boston College, co-chair)
Donna Shillington (Northern Arizona University, co-chair)
Kasey Aderhold (IRIS)
Jade Bowers (Boise State University, EC workshop co-convener)
Behrooz Ferdowsi (University of Houston, EC workshop co-convener)
Anaïs Férot (UC Santa Cruz, SZ4D Office)
Melodie French (Rice University, EC workshop co-convener)
Krystin Poitra (IRIS)
Diana Roman (Carnegie)
David Sandwell (UC San Diego)
Justin Sweet (IRIS)

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Last update November 9, 2022



SZ4D Community Meeting Agenda

November 14-16, 2022 | Houston, TX

With an Early Career event on November 13

<https://www.sz4d.org/2022-community-meeting>

Plenary session:

Imperial Ballroom West - Third floor (M-W)

Breakout rooms:

Dogwood, Cottonwood - Third floor (M, Tue)

Arboretum I-V - Second floor (M, Tue)

Dogwood, Cottonwood, Rosebud, Mesquite, Imperial Ballroom West (W)

Meeting registration booth:

Imperial Ballroom foyer - Third floor (M-W)

Poster session:

Market Place / Exhibit Hall - First floor (M-Tue)

Goals

- Share subduction zone science, networking with other subduction zone scientists
- Inform the community about SZ4D efforts so far
- Community feedback

Day 0 - November 13, 2022

Starting at 12pm | Meeting registration (*Imperial Foyer, third floor*)

1-6:30pm | Early Career Event (*Arboretum III-V, second floor*)



DAY 1 - November 14, 2022

Starting at 7am | Meeting registration and coffee (*Imperial Foyer, third floor*)

8:30am | Meeting start (*Imperial Ballroom West, third floor*)

Plenary session 1: Introduction *Zoom live broadcast*

8:30-8:45am | Welcome and introduction to goals of meeting (Mark Behn, Donna Shillington, Diana Roman)

8:45-9:30am | Overview of history and status of SZ4D (Emily Brodsky)

9:30-10:00am | AndesNet (Sergio Barrientos)

10:00-10:30am | Comments from funding agencies - NSF, USGS, NASA
NSF (Jennifer Wade and Gail Christeson)
USGS (Gavin Hayes)
NASA (Ben Phillips)

10:30-11:00am | Coffee break

Plenary session 2: SZ4D science *Zoom live broadcast*

11:00-11:15am | Building Equity and Capacity with Geoscience (Andy Frassetto)

11:15-11:30am | Faulting and Earthquake Cycles (Demian Saffer)

11:30-11:45am | Landscapes and Seascapes (Kristin Morell)

11:45-12:00pm | Magmatic Drivers of Eruption (Peter Barry)

12:00-12:15pm | Questions and discussion

12:15-1:45pm | Lunch on site (*Imperial Ballroom East, third floor*)

Plenary session 3: Introduction to sites and activities *Zoom live broadcast*

1:45-2:05pm | Chile (Álvaro Amigo Ramos)

2:05-2:25pm | Cascadia (Joan Gomberg)

2:25-2:45pm | Alaska/Aleutians (Jeff Freymueller)

2:45-2:55pm | GeoArray (Kristin Morell)



2:55-3:05pm | Experimental efforts (Melodie French)

3:05-3:15pm | Numerical modeling (Alice Gabriel)

BREAKOUT 1: SZ4D priorities for observations, models, and experiments

3:15-3:30pm | Introduction to Breakout 1

3:30-3:45pm | Break - Participants go to breakout rooms (*no refreshments provided*)

3:45-4:45pm | Breakout by working & integrative groups

Group 1.1 - FEC1: Cottonwood

Group 1.2 - FEC2: Dogwood

Group 1.3 - FEC3: Arboretum V

Group 1.4 - LS1: Arboretum I

Group 1.5 - LS2: Arboretum II

Group 1.6 - MDE1: Arboretum III

Group 1.7 - MDE2: Arboretum IV

Groups 1.8x: Virtual Breakout Session - Zoom

Discussion topics:

- *What components of notional observational plans do you think are particularly important to address the science questions and/or poised to yield exciting new results? What modeling, experimental, and analog site activities should be given high priority?*
- *How would you adapt notional plans to the specific places highlighted by the SZ4D Implementation Plan?*

4:45-6:00pm | Poster session & hors d'oeuvres (*Market Place / Exhibit Hall, first floor*)

**In person participants provide comments on topics with post-it notes on large maps of field areas and under different themes (highest priorities for SZ4D, questions concerns).*

Dinner on your own

DAY 2 - November 15, 2022

Starting at 7am | Coffee (*Imperial Foyer, third floor*)

8:30am | Meeting start (*Imperial Ballroom West, third floor*)



Plenary session 4: Report backs from Breakout 1 *Zoom live broadcast*

8:30-9:30am | Report backs from Breakout 1, plenary discussion

Plenary session 5: Crosscutting science and emerging methodologies and technology - 1 *Zoom live broadcast*

9:30-9:45am | Mechanical and hydrological processes governing slow landslide slip in an exhumed subduction mélange (Noah Finnegan)

9:45-10:00am | Capturing high-resolution subduction zone seismicity: Recent advances, current efforts, and continuing challenges (Grace Barcheck)

10:00-10:15am | Crystals and glass as records of volcanic processes (Michelle Muth)

10:15-10:30am | Integrating efforts to build equity and capacity into pilot SZ4D science (Mike Brudzinski)

10:30-11:00am | Coffee break and group photo

Plenary session 6: Cross cutting science and emerging methodologies and technology - 2 *Zoom live broadcast*

11:00-11:15am | Investigating the transient friction of near-surface and subsurface fault zones using granular physics simulations and rheology experiments (Behrooz Ferdowsi)

11:15-11:30am | What has happened to the Chilean volcanoes in the 12 years since the 2010 Mw 8.8 Maule earthquake? A brief review of observations and models, with questions for the future (Cristian Farías)

11:30-11:45am | Integrating thermodynamic melting models and geophysical images to estimate magma reservoir conditions (Darcy Cordell)

11:45am-12:00pm | Shallow megathrust kinematics from seafloor geodesy (David Schmidt)

12:00-1:30pm | Lunch on site (*Imperial Ballroom East, third floor*)

1:30-2:30pm | Lightning talks (*Imperial Ballroom West, third floor*)

BREAKOUT 2: Crosscutting and translational science



2:30-2:45pm | Introduction to Breakout 2: Introduction to crosscutting science from report

2:45-3:00pm | Break - Participants go to breakout rooms (*no refreshments provided*)

3:00-4:30pm | Breakout in interdisciplinary groups

Group 2.1: Cottonwood

Group 2.2: Dogwood

Group 2.3: Arboretum I

Group 2.4: Arboretum II

Group 2.5: Arboretum III

Group 2.6: Arboretum IV

Group 2.7: Arboretum V

Groups 2.8x: Virtual Breakout Session - Zoom

Discussion topics:

- *How can we promote interdisciplinary collaboration in SZ4D? What are the benefits of interdisciplinary collaboration? What are the barriers? How do observational, experimental, numerical components need to be designed to facilitate integration and fit together in a cohesive whole?*
- *How can we design the observational, experimental, numerical components to enable translation of results, resources, and training from one site and one community to another (e.g., lessons learned from Chile to Cascadia) and to subduction zones globally?*

4:30-6:00pm | Poster session & hors d'oeuvres (*Market Place / Exhibit Hall, first floor*)

**In person participants provide comments on topics with post-it notes on large maps of field areas and under different themes (highest priorities for SZ4D, questions concerns).*

Dinner on your own

DAY 3 - November 16, 2022

Starting at 7am | Coffee (*Imperial Foyer, third floor*)

8:30am | Meeting start (*Imperial Ballroom West, third floor*)

Plenary session 7: Breakout 2 report back and best practices for collaboration *Zoom live broadcast*



8:30-9:00am | Breakout 2 report back and plenary discussion and open mic

9:00-9:20am | Funding strategies for large projects (Maggie Benoit, NSF) (live, virtual)

9:20-9:50am | Overview of next steps, including proposal opportunities (Emily Brodsky)

9:50-10:00am | Introduction to Breakout 3

Zoom

10:00-10:30am | Coffee break and move to breakout rooms

BREAKOUT 3: Next steps: planning activities, future proposals, and community engagement

10:30-11:30am | Participants choose their own breakouts on different components of SZ4D (VolcArray, SurfArray, MegaArray, modeling, geology & experiments)

Group 3.1 - MegaArray: Cottonwood

Group 3.2 - SurfArray: Dogwood

Group 3.3 - VolcArray: Mesquite

Group 3.4 - Modeling: Rosebud

Group 3.5 - Geology & Experiments: Imperial Ballroom West

Group 3.6x: Virtual Breakout Session - Zoom

Discussion topics:

- *Review of planning activities towards proposals for each component. What else is needed to prepare proposals?*
- *What components require new technologies/methodologies that would benefit from design activities? What mechanisms could be used to fund these design phase activities?*
- *What aspects of SZ4D require funding mechanisms outside of NSF core programs?*
- *How can we best engage the community in planning and training activities for future proposals? When and how do we engage other stakeholders?*

Plenary session 8: Breakout 3 report back and next steps *Zoom live broadcast*

11:30-11:45am | Plenary discussion of ideas from Breakout 3

11:45am-12:00pm | Wrap up and adjourn (Mark Behn and Donna Shillington)

- I -Perso P rti i t List -

First Name	Last Name	Institution/Affiliation
Organizers		
Mark	Behn	Boston College
Donna	Shillington	Northern Arizona University
Kasey	Aderhold	IRIS
Jade	Bowers	Boise State University
Behrooz	Ferdowsi	University of Houston
Anaïs	Férot	UC Santa Cruz
Melodie	French	Rice University
Diana	Roman	Carnegie Institution for Science
Justin	Sweet	IRIS
Presenters		
Álvaro	Amigo	Servicio Nacional de Geología y Minería - SERNAGEOMIN
Grace	Barcheck	University of Idaho; Cornell University
Sergio	Barrientos	University of Chile
Peter	Barry	Woods Hole Oceanographic Institution
Maggie	Benoit	National Science Foundation <i>(online)</i>
Emily	Brodsky	UC Santa Cruz - SZ4D Chair
Mike	Brudzinski	Miami University
Gail	Christeson	National Science Foundation
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Yurong	Zhang	Michigan State University
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- Poster List -

Poster #	Poster Title	Author(s)
1	3D Crustal-Scale Velocity Structure of the Alaska Subduction Zone from Controlled-Source Seismic Data Acquired during the Alaska Amphibious Community Seismic Experiment (AACSE)	Tanner Acquisto, Anne Bécél, Pablo Canales, Donna Shillington
2	Crystallization of a High-Al Basalt Under Oxidizing Conditions at PH ₂ O=8kb: Implications for Generating Strong Fe-Depletion, Calc-Alkaline Trends at Island Arcs	Janine Andrys, Elizabeth Cottrell, Katherine Kelley, Laura Waters
3	Seismic Assessments of the Hikurangi and Aleutian-Alaska Subduction Zones	Farzaneh Aziz Zanjani, Guoqing Lin, Clifford H. Thurber
4	The Atacama Seismic Gap, Result of Anillo Project from a Dense GNSS and Seismic Network	Juan-Carlos Baez, M. Moreno, F. Ortega-Culaciati, D. González, D. Melnick, R. Benavente, R. Araya, V. Yáñez, F. Tilmann, A. Socquet, D. Lange, C. Sippl, J. Bedford
5	Examining the Roles of Mineralogy and Roughness on Hotspot Development in High-Speed Friction Experiments on Granite	Monica Barbery, Frederick Chester, Judith Chester
6	Cycling of Fluid-Mobile Elements Through the Costa Rica Forearc	Jaime D. Barnes, Jacob P. Helper, J. Maarten de Moor, Alejandro Rodríguez, Samuele Agostini, John C. Lassiter, Rudra Chatterjee, Daniel F. Stockli
7	Investigation of Structural Controls on Megathrust Slip Behavior In and Around the Guerrero Seismic Gap off the Pacific Coast of Mexico Using New Active Source Seismic Data	Anne Bécél, Víctor Manuel Cruz-Atienza, Brian Boston, Donna Shillington, Shuoshuo Han, Brandon Shuck, Jorge Arturo Real-Pérez, Joshua Burstein, Tanner Acquisto, Yoshihiro Ito, Davis Hagemeyer, Grace Ward
8	Fluid Flow Within the Shallow Forearc of the Cascadia Subduction Zone: Seismic Imaging, High-Resolution ROV Mapping, and Gas/Fluid Geochemistry	Jeff Beeson, Tamara Baumberger, Susan Merle, Anson Antriasian, Anne Trehu, David Butterfield, Nathan Buck, GuangSin Lu, Kevin Roe, Brian Boston, Suzanne M. Carbotte, Shuoshuo Han, Harold Tobin
9	A New Method of Volcano Monitoring With Magnetic Measurements	Joseph Biasi, Maurice Tivey, Bailey Fluegel
10	The Reconstruction of Arc Magma Volatiles Contents from Amphiboles in Arc Cumulates	Jackson Borhardt, Cin-Ty Lee
11	Illuminating the Cascadia Plate Interface Geometry and Properties from the Cascadia Seismic Imaging Experiment 2021 (CASIE21)	Brian Boston, Suzanne M. Carbotte, Shuoshuo Han, Brandon Shuck, Jeff Beeson, J. Pablo Canales, Mladen Nedimovic, Harold Tobin, ION GTX Processing Team
12	How Important Is Small-Scale Geochemical Variability To Constraining Sources and Processes?	Jade M. Bowers, Darin M. Schwartz, V. Dorsey Wanless
13	Influence of Heterogeneity and Geometry of Geological Layered Sequences on Magma Emplacement, Propagation and Related Ground Deformation	Matías Clunes, John Browning, José Cembrano, Carlos Marquardt, Kyriaki Drymoni, Agust Gudmundsson, Janine Kavanagh
14	Resolving Transient Phenomena at High Pressure: Applications to Creep and Frictional Processes	Eric Burdette, Greg Hirth
15	Generalized Radon Transform Migration across the Indo-Burman Accretionary Margin	Christopher Carchedi, James Gaherty, Stéphane Rondenay, Rasheed Ajala, Patricia Persaud, Md. Samiul Alim, Syed Humayun Akhter, Eric Sandvol, Michael Steckler
16	A Preliminary Low-Temperature Exhumation Study of the Central Aleutian Arc	Anahi Carrera, Emily H.G. Cooperdock
17	Stress and Fluid State at the Base of the Subduction Seismogenic Zone: The View from the Rock Record	Cailey Condit, Melodie French, Will Hoover

- Poster List -

Poster #	Poster Title	Author(s)
18	Seismic Reflection Imaging of along-Strike Changes in Forearc Structure in the Andreanof Segment of the Aleutian Subduction Zone	Valeria Cortés-Rivas, Donna Shillington, Dan Lizarralde, Hannah Mark, Justin Estep, Brian Boston
19	Devolatilization from Early to Mature Subduction Inferred from Paired Geodynamic-Thermodynamic Models	Gabe S. Epstein, Cailey B. Condit, Adam F. Holt, Victor E. Guevara
20	Looking at the Most Active Structures at Osorno Volcano from Seismicity and Numerical Simulations: Preliminary Results	Cristian Farías, Kattia Varas, Claudio Venegas, Inés Rodríguez, Yusthy Alvarado, Valeska Olivos, Pedro Sánchez, Fernando Huenupán
21	Deformation Mechanisms, Mineral Kinetics, and Coupling Between Fluid Flow and Slip along the Subduction Megathrust	Don Fisher, Andrew Smye, Chris Marone, Tsai-Wei Chen, Raphael Affiniti, Greg Hirth, John Hooker
22	Observational Opportunities and Challenges on the Bottom of the Sea	Joan Gomberg, Keisuke Ariyoshi, Erik Fredrickson, Paul Johnson, Susan Hautala, William Wilcock
23	Sediment Subduction and Outer Wedge Strength along the Cascadia Margin Constrained by New Seismic Data from the CASIE21 Experiment	Shuoshuo Han, Suzanne Carbotte, Brian Boston, J. Pablo Canales, Harold Tobin, Jeffery Beeson, Mladen Nedimovic, MGL2104 Science Party, ION Geophysical Processing Team
24	Storage Configuration and Evacuation of the Lava Creek Tuff, Yellowstone, Investigate Using Sanidine Chemistry	Stacy Henderson, Madison Myers, Colin Wilson, Raymond Salazar
25	Episodic Slow Slip Hosted by Talc-Bearing Metasomatic Rocks: High Strain Rates and Stress Amplification in a Chemically Reacting Shear Zone	William F. Hoover, C. B. Condit, P. C. Lindquist, A.C. Moser, V.E. Guevara
26	Modeling and Monitoring in Nankai Trough and Japan-Kuril Trench	Takane Hori
27	Examining Plate-Asthenosphere Decoupling and Anomalous Volcanism along the Pacific Ring of Fire	Margarete Jadamec, Vivek Bhavsar, Bailey Valint, Jane Halfhill, Rachel Bakowski, Thomas Kowalski
28	Improved Estimates of Crustal Magmatic Storage in the Alaska-Aleutian Arc Through Seismic Receiver Functions	Helen Janiszewski, Ian Wynn, Casey Wandasari, Madeleine Tan, Lara Wagner, Diana Roman, Daniel Portner
29	Earthquake Clustering and Statistics at the Alaska Peninsula	Yaqi Jie, Shawn Songqiao Wei, Weiqiang Zhu
30	Signatures of Magmatically Driven Uplift in the Geology, Topography, and Geophysics of the Columbia River Gorge	Nathaniel Klema, Leif Karlstrom, Charles Cannon, Ray Well, Jim O'Connor
31	Topography in Subduction Zones: When to Account for It for Fault Slip Estimates?	Leah Langer, Thea Ragon
32	Analyzing Active Splay Faults at the Cascadia Accretionary Wedge, Washington, Using Near-Surface and Deep Seismic Reflection Imaging	Anna Ledeczi, Madeleine Lucas, Harold Tobin, Janet Watt, Suzanne Carbotte, Shuoshuo Han, Brian Boston
33	VICTOR — A New Cyber-infrastructure for Volcanology	Einat Lev, Sam Krasnoff, Charles Connor, Abani Patra, Sylvain Charbonnier, Laura Connor
34	CONVERSE – A Community Network for the Scientific Response to Volcanic Eruptions	Einat Lev, on behalf of the CONVERSE center team

- Poster List -

Poster #	Poster Title	Author(s)
35	Investigating Mantle Dynamics in the Pacific Northwest Using 3D High-resolution Anisotropic Velocity Models	Aibing Li, Zhongmin Tao
36	Predicting Talc Production by Metasomatism at the Conditions of Slow Slip Beneath Guerrero, Mexico	Peter Lindquist, Cailey Condit, Victor Guevara, David Hernández-Uribe, William Hoover
37	Receiver Function Analysis Reveals Lateral Variations in Temperature and Water Content in the Mantle Transition Zone Beneath Eastern North America	Shangxin Liu, Scott D. King, Maureen D. Long, Margaret H. Benoit, John C. Aragon
38	The Evolution of Pore Pressure, Stress, and Physical Properties During Sediment Accretion at Subduction Zones	Maria-Aikaterini Nikolinakou, Peter B Flemings, B Gao, Demian M Saffer, Graciela Lopez-Campos
39	Analyzing Active Splay Faults at the Cascadia Accretionary Wedge, Washington, Using Near-surface and Deep Seismic Reflection Imaging	Madeleine Lucas, Anna Ledeczi, Harold Tobin, Janet Watt, Suzanne Carbotte, Shuoshuo Han, Brian Boston
40	Lateral Variations of Attenuation in the Crust of Alaska using Lg Q Tomography	Anuradha Mahanama, Chris H Cramer
41	Inferring the Effective Rheology of the Earth's Lithosphere Using Geodetic Observations of Earthquake Sequences	Rishav Mallick, Valère Lambert, Brendan Meade, Mark Simons
42	Bend Faulting and Mantle Hydration at the Marianas Trench from Seismic Anisotropy	Hannah Mark, Daniel Lizarralde, Douglas A. Wiens
43	Insights into the 15 January 2022 Hunga Volcano, Tonga Eruption Using Infrasound, Lightning, and Particle Properties	Kathleen McKee, V.J.B. Flower, R.A. Kahn, J.D. Assink, C. Vagasky, S. Behnke, A. Van Eaton, L. Mastin, J.A. Limbacher, K.T. Junghenn Noyes
44	Subduction Zone Earthquake Cycle Processes: Insights from Forearc Deformation along the Cascadia Margin	Kirsty McKenzie, Kevin Furlong, Matthew Herman, Eric Kirby
45	Variations of Fault Architecture along the Shallow Megathrust	Emory McKenzie, Melodie French, Stewart Williams
46	Integrated Deep-Ocean Observing System for Geoscience Research in Chile: IDOOS	Marcos Moreno, Melnick, D., Diaz, Ramirez, N., Lange, D., Ortega-Culaciati, F., Baez, J.C., Ulloa, O., Kopp, H.
47	Seafloor Overthrusting Causes Ductile Fault Deformation and Fault Sealing along the Northern Hikurangi Margin	Julia K. Morgan, Evan Solomon, Ake Fagereng, Heather Savage, Maomao Wang, Francesca Meneghini, Philip Barnes, Rebecca Bell, Melodie French, Nathan Bangs, Hiroko Kitajima, Demian Saffer, Laura Wallace
48	Links Between Slab Mantle Dehydration and Forearc Seismogenic Zone Structure in the Shumagin Gap, Alaska Using Magnetotelluric Imaging	Darcy Cordell, Samer Naif, Rob Evans, Kerry Key, Steve Constable, Donna Shillington, Anne Bécel
49	Detecting Potential Structure Changes During an ETS Event Using an Eccentric Mass Shaker	Fenglin Niu, Robert Nigbor
50	Marine Geophysical/Geological Survey of Seismogenic Subduction Zone in JAMSTEC	Koichiro Obana, Gou Fujie, Yasuyuki Nakamura, Toshiya Kanamatsu, Shuichi Kodaira
51	Imaging Magma Body by Converted Waves: Newberry as An Example	Guanning Pang and Geoffrey Abers

- Poster List -

Poster #	Poster Title	Author(s)
52	The Effects of the Pre-Subduction Architecture on Coherent Underplating Investigated by Geo-Thermochronology and Microstructural Analyses	Eirini Poulaki, Daniel Stockli, Brandon Shuck
53	New Insights on the Denali Volcanic Gap and the Shallow Crustal Structure of South-Central Alaska	Santiago Rabade, Fan-Chi Lin, Amir Allam
54	A Secondary Zone of Uplift Measured after Megathrust Earthquakes: Caused by Early Downslip Afterslip?	Théa Ragon, Mark Simons
55	Geophysical Network for Monitoring Ecuadorean Subduction Zone	Mario Ruiz, Mónica Segovia, Patricia Mothes, Sandro Vaca, Cristina Ramos, Jorge Aguilar, Stephen Hernandez, Cristian Viracucha, Wilson Acero
56	Relationship Between Ultra-low Frictional Healing and Shallow Slow Slip at the Northern Hikurangi Margin	Shrisharan Shreedharan, Demian Saffer, Laura Wallace, Charles Williams
57	A New Plate Boundary Born as Another Dies: The Influence of the Nootka Fault Zone Segmenting Subduction Processes along the Northern Cascadia Margin	Brandon Shuck, Suzanne Carbotte, Brian Boston, Shuoshuo Han, Tanner Acquisto, Anne Bécel, Jeff Beeson, Pablo Canales, Michelle Lee, Mladen Nedimovic, Harold Tobin, ION GTX team
58	U-CORS: An Underwater Continuously Operating Reference Station for Deep Seafloor Geodesy	Terance Schuh, Harold T. "Bud" Vincent, Hayden Radke, Frederik J Simons
59	Monitoring the 2021 Mw 8.2 Chignik, Alaska Earthquake by Ocean Networks Canada's NEPTUNE Observatory	Tianhaozhe Sun, Earl Davis
60	Minimal Climatic Influences on the Heights and Across-Strike Asymmetries of Cordilleran Mountains	Pedro Val, Jane Willenbring
61	Subduction Fluids Control Slab Slip Behaviors and Megathrust Earthquakes at the Alaska Peninsula	Fan Wang, S. Shawn Wei, Julie Elliott, Jeffrey T. Freymueller, Connor Drooff, Natalia Ruppert, Haijiang Zhang
62	Detecting Seismic Phases from Tonga Deep Earthquakes Using Deep Learning	S. Shawn Wei, Ziyi Xi, Fan Wang, Nooshin Saloor, Weiqiang Zhu, Gregory Beroza
63	Expanding Long-Term Observations of the Cascadia Subduction Zone with the Ocean Observatories Initiative Regional Cabled Array	William Wilcock, David Schmidt, Harold Tobin
64	Fracture Patterns of Dilatant Hardening from Laboratory Experiments	Stewart Williams, Melodie French
65	Plate Tectonic Controls on Subduction Arc Magmatism from Ancient and Recent Western Pacific Arc Geochemistry	Jeremy Tsung-Jui Wu, Jonny Wu, Lingling Chen, Yangming Wu, Mikyoung Jun, Moloud Rahimzadeh Bajiran
66	Mobilization and Mechanism of Diverse Landslides near the US West Coast	Yuankun Xu, Roland Burgman, William Schulz, Zhong Lu, David George
67	Seismic Imaging of Double Magma Reservoirs Beneath the Great Sitkin Volcano in Central Aleutian Volcanic Arc	Xiaotao Yang, Diana Roman, Matt Haney, Cody Kupres
68	The Propagation of Extreme Landslide Events Through the Fluvial Systems of Taiwan	Brian J. Yanites, Clarke DeLisle

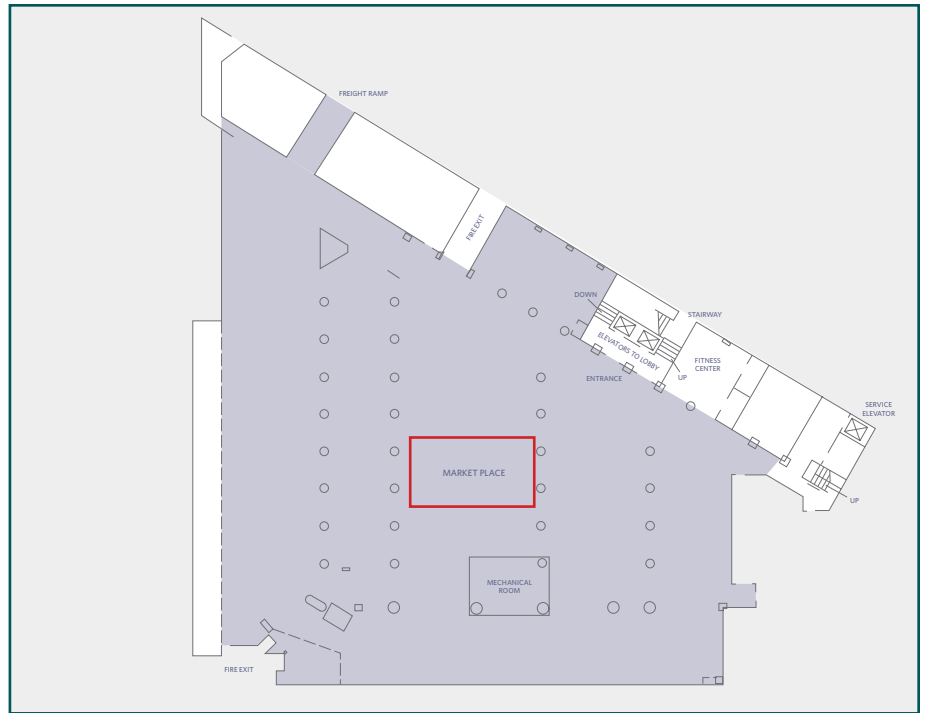
- Poster List -

Poster #	Poster Title	Author(s)
69	P-wave Attenuation Structure of the Tonga Subduction Zone and Implications for Mantle Wedge Processes	Yurong Zhang, S. Shawn Wei, Joseph Byrnes, Dongdong Tian, Fan Wang, Maximiliano Bezada
70	Origin of Strong Slab Anisotropy and the Influence on Earthquake Moment Tensors	Yingcai Zheng, Rongrong Lin, Leon Thomsen, Jiaxuan Li, Hao Hu
71	SZ4Grads: Subduction Zones for Grad-Students and Graduates	Tamara Aranguiz, Jade Bowers, Emilie Bowman, Emma Burkett, Valeria Cortes-Rivas, Behnaz Hosseini, Nate Klema, Aubrey LaPlante, Michael Murphy, Fan Wang (alphabetical order)
72	Using Quartz to Probe the Near-Eruption Assembly and Evolution of the Youngest Toba Tuff Magma System	Casey R. Tierney, Mary R. Reid, Dale H. Burns
73		
74		
75		
76		

FIRST FLOOR

POSTER HALL:
Mon, Tue

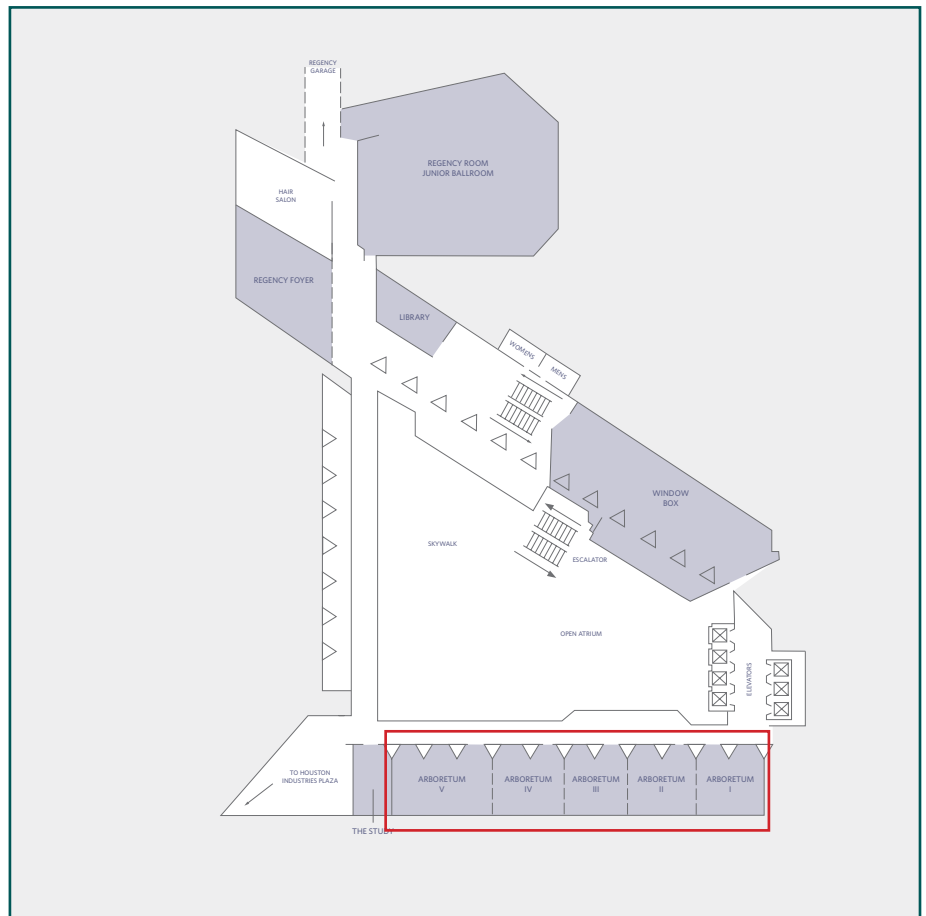
Market Place



SECOND FLOOR

BREAKOUT ROOMS:
Mon, Tue

Arboretum I-V



THIRD FLOOR

REGISTRATION BOOTH: Imperial Ballroom foyer (Monday-Wednesday)

PLENARY SESSION: Imperial Ballroom West (Monday-Wednesday)

BREAKOUT ROOMS: Dogwood, Cottonwood (Monday, Tuesday)

LUNCH: Imperial Ballroom East (Monday-Tuesday)

