

2025 Northern California Earthquake Hazards Workshop

January 28 – January 30, 2025

USGS, virtual from Moffett Field, California

Pacific Standard Time (UTC-8)

Day 1, Tuesday, January 28

9:30-9:45 a.m. **Welcoming Remarks**

Christine Goulet, Earthquake Science Center Director (USGS)

Sarah Minson, Northern California Earthquake Hazards Program Coordinator (USGS)

John Grindle, Workshop Format (Grin Events)

9:45-11:30 a.m. **I'm afraid I can't do that, Dave: responsible use of machine learning and artificial intelligence**

Speakers [15 min each]:

Cody Rucker (University of Oregon) *Physics-informed Neural Networks for Rate-and-State Inversions: Possibilities and Limitations*

Karianne Bergen (Brown University) *Beyond the Buzzwords: What Every Earth Scientist Should Know Before Using AI*

Umaa Rebbapragada (NASA/JPL) *Building and Deploying Machine Learning Systems for Scientific Applications: A JPL Perspective*

Amir Behzadan (University of Colorado) *Ready for the next disaster? Building trust and fairness into AI-driven disaster damage outcomes*

Sorelle Friedler (Haverford College) *How to successfully use AI for science: experimental design, explainability, and avoiding bias*

Discussion: 30 min

Moderators: **Theresa Sawi** (USGS), **Rob Skoumal** (USGS)

11:30-11:45 a.m. **Break**

11:45 a.m.-12:15 p.m. **What's happening? – News and events in northern California earthquake research**

Speakers [5 min each]:

Nicole Mendoza (CalOES) *Climate change and earthquakes workshop*

Heidi Tremayne (EERI) *EERI update*

Tim Melbourne (CWU) *CRESCENT update*

Greg Beroza (Stanford) *SCEC update*

Discussion: 10 min

Moderator: **Anne Wein** (USGS)

12:15-1:15 p.m. **Break**

1:15-2:30 p.m. **The fault not in our stars but over here or maybe there: fault geometry and uncertainty in northern California**

Speakers [15 min each]:

Scott Marshall (Appalachian State University) *The SCEC Statewide Community Fault Model (CFM 7.0)*

Vera Schulte-Pelkum (University of Colorado) + **Debi Kilb** (SIO) *Imaging northern California faults across the brittle-ductile transition using receiver function anisotropy, seismicity, and focal mechanisms*

Scott Callaghan (SCEC) *CyberShake results for Northern California*

Discussion: 30 min

Moderators: **Evan Hirakawa** (USGS), **Artie Rodgers** (LLNL)

2:30-2:45 p.m. **Break**

2:45-3:30 p.m. **Thunder Talks I** [5 min each]

3:30-4:30 p.m. **A month before NCEHW? Time for a MTJ earthquake! – The 2024 M7.0 Offshore Cape Mendocino earthquake**

4:30 p.m. **Adjourn day 1**

Day 2, Wednesday, January 29

9:30-11:00 a.m. **Power to the people: equitable restoration following an earthquake**

Speakers [15 min each]:

Mikel Gordon (Jacksonville State University) *Disaster Equity: Different People, Different Contexts, Different Needs?*

Melanie Gall (Arizona State University) *Disasters and Education: School closures disrupt more than learning*

Judanne Lennox-Morrison (Texas A&M University at College Station) *A Justice and Grassroots Approach to Food Insecurity & Seismic Resilience: Filling the Gaps*

Brian Low (Pacific Gas and Electric Company) *Earthquake Resilient Energy for All*

Discussion: 30 min

Moderators: **Alessandra Jerolleman** (Loyola University New Orleans College of Law), **Monika Stoeffl** (California Resiliency Alliance)

11:00-11:15 a.m. **Break**

11:15 a.m.-12:15 p.m. **Thunder Talks II** [5 min each]

12:15-1:15 p.m. **Break**

1:15-2:45 p.m. **I think that I shall never see a geochronometer as lovely as a tree: high resolution earthquake chronology**

Speakers [15 min each]:

Bryan Black (University of Arizona) *A new generation of dendrochronology techniques to date Cascadia-killed trees on the northern California coast*

Allyson Carroll (Cal Poly Humboldt) *Dendroseismological investigation of coast redwood along the North Coast segment of the San Andreas Fault*

Jessie Pearl (Nature Conservancy) *Debris Avalanches in the Northern California Coast Range triggered by Plate-Boundary Earthquakes*

Kate Scharer (USGS) *Quantifying bias in paleoearthquake dates from charcoal ages*

Discussion: 30 min

Moderators: **Ozgur Kozaci** (PG&E), **Belle Philibosian** (USGS)

2:45-3:00 p.m. **Break**

3:00-4:30 p.m. **Ferndale revisited: what we know about the M6.4 Ferndale earthquake and regional faulting 2+ years later**

Speakers [15 min each]:

Jay Patton (CGS) *Gorda Redux: 1975, 2022, and you*

James Atterholt (USGS) *Structural Variability in the Gorda Slab with Converted Phases Measured by a Fiber-Optic Array*

Clara Yoon (USGS) *Distinct Yet Adjacent Earthquake Sequences near the Mendocino Triple Junction: 2021 Petrolia and 2022 Ferndale*

Peggy Hellweg (UC Berkeley) and **Lori Dengler** (Cal Poly Humboldt) *Revisiting an Enigma in the Mendocino Triple Junction: the M6.5 Fickle Hill Earthquake of December 1954*

Discussion: 30 min

Moderators: **Bob McPherson** (Cal Poly Humboldt), **Judy Zachariassen** (CGS)

4:30 p.m. **Adjourn day 2**

Day 3, Thursday, January 30

9:30-11:00 a.m. Edge of the Bay Area: earthquake hazards across the Bay Area megaregion

Speakers [15 min each]:

Dena Belzer (Strategic Economics) + **Andy Kosinski** (Fehr & Peers) *Post COVID changes in Bay Area travel behavior and its Implications for Critical Transportation Infrastructure*

Vicki Langenheim (USGS) *Basin structure in the Concord-Walnut Creek-Livermore region, northern California, from gravity studies*

Chad Trexler (USGS) *Quaternary-Active Faults and the Role of Inherited Structures in the Sacramento-San Joaquin Delta*

Don Hoirup + **Chad Carlson** (DWR) *Seismic Hazard Risks to the California State Water Project in and around the Bay Area*

Discussion: 30 min

Moderators: **Jeff Bellasario** (Bay Area Council), **Taka'aki Taira** (UC Berkeley)

11:00-11:15 a.m. **Break**

11:15 a.m.-12:15 p.m. **Thunder Talks III** [5 min each]

12:15-1:15 p.m. **Break**

1:15-2:45 p.m. **What geodesy can do for you in northern California**

Speakers [15 min each]:

Mike Floyd (MIT) *GNSS observations for active faulting, geothermal and hydrological studies in northern California*

Catherine (Cassie) Hanagan (USGS) *Creeping through a stepover: a top-down view from geomorphology, seismology, and geodesy*

Danielle Lindsay (UC Berkeley) *Annual to Decadal Creep Rates along the Maacama Fault*

Katia Tymofyeyeva (NASA/JPL) *NISAR and beyond: the promise of new space geodetic measurements in Northern California*

Discussion: 30 min

Moderators: **Katherine Guns** (USGS), **Chelsea Scott** (ASU)

2:45-3:00 p.m. **Break**

3:00-4:30 p.m. **Failure is not an option: keeping hospitals and fire stations operational**

Speakers [15 min each]:

Kathryn Austin Scott (CHA) *Status of seismic retrofits for hospitals in the Bay Area and northern California in light of the 2030 State deadline*

Gordy Wray (Degenkolb Engineers) *Nonstructural Performance of California Hospitals*

Luis Ceferino (UC Berkeley) *The seismic resilience of hospital systems: field observations in Turkey and risk modeling in the San Francisco Bay Area*

Jia Wang-Connelly (CalOES) *Fire station Seismic risk Assessment and Retrofit Benefit-Cost Analysis*

Discussion: 30 min

Moderators: **Ayse Hortacsu** (ATC), **Chiara McKenney** (Estructure)

4:30 p.m. **Concluding Remarks**

4:45 p.m. **Adjourn**