# Meeting Reports

## 2025 SSA Environmental Seismology Meeting Report

Environmental Seismology: Earth's Surface and Subsurface Hazards, Dynamics and Resources was held in Denver, Colorado, on 14–18 October 2025. The meeting, the fourth topical conference convened by the Seismological Society of America, was co-chaired by Rick Aster of Colorado State University and Siobhan Niklasson of New Mexico Tech. The meeting included 139 participants from 88 institutions and 16 countries.

Aster and Niklasson proposed the meeting to acknowledge the tremendous advances in research topics now falling under the umbrella of environmental seismology, from cryoseismology to groundwater and fluvial dynamics, landslides, ocean signals, extreme weather events, subsurface monitoring and imaging, and urban seismology. As Aster said in his remarks to open the meeting, "Elastic waves are ubiquitous, and I think the breadth of this conference really shows the great reach of seismology."

On Tuesday, 14 October, the meeting opened with a reception and the keynote address "Environmental Forcing of Faults and Slow-moving Landslides" by Roland Bürgmann of the University of California, Berkeley Department of Earth and Planetary Science, and the Berkeley Seismological Laboratory. Bürgmann shared examples of how environmental processes such as hydrological variations across various timescales impact the tectonics of California's San Andreas Fault and slow-moving landslides such as the Slumgullion Earthflow in southern Colorado.

Bürgmann suggested that these forcing studies could not only help researchers understand environmental phenomena also "but actually learn something about tectonic faults, about their mechanical behavior and properties and about landslides, the dynamics of slope movement in landslides, by seeing how they respond to these external changes in stress and conditions."

The Wednesday through Friday sessions featured keynote and invited presentations, poster sessions open at breakfast and during session breaks, and morning and afternoon oral sessions. At the end of each oral session, speakers participated in a panel discussion with the audience.

The Wednesday, 15 October keynote speakers were Fabian Walter of Swiss Federal Institute for Forest, Snow and Landscape Research WSL on "News from the Dark: Portable and Distributed Seismic Sensors Shed Light on Subglacial Processes" and Victor Tsai of Brown University on "Using Seismology for Non-earthquake Signals."

On Thursday, 16 October, keynote speakers included Domniki Asimaki of the California Institute of Technology on "Machine-Learning Ground Motions for Infrastructure Risk Reduction" and Andreas Fichtner of ETH Zürich on "Integrated Fiber-optic Sensing—Technological Developments and Potentials for Environmental Applications."

The meeting concluded on Friday, 17 October with a keynote address by Jean-Philippe Avouac of the California Institute of Technology on "Recent Advances in the Understanding and Forecasting of Induced Seismicity" and a closing session on the seismic investigation of mass movements.

Some of the themes that emerged during the four days of presentations included the need for greater integration of seismic data with other types of relevant environmental data collected at study sites; attention to the timescales and temporal patterns of interest for each research question; the ability to identify and study precursor events; and the need for better understanding and modeling of the fundamental physics behind some of the smaller high-frequency signals studied in this discipline.

Speakers also emphasized the importance of collaboration with experienced engineers to provide the types of multisensors and stable power sources, data telemetry, and other components needed for long-term deployment in challenging environments such as glaciers and riverbeds, as well as hungry polar fox hunting grounds. Another key challenge mentioned often was the need for better data storage and cataloging so that the vast amounts of information collected can be searchable and tagged for machine learning analysis.

Attendees discussed ways to reach out to a broad range of funding agencies and facilities that could support multidisciplinary research required for the field's success. Several attendees noted the absence of U.S. federal agency and lab colleagues, who could not attend the topical conference because of a U.S. government shutdown.

On Saturday, 18 October, 37 meeting attendees participated in a field seminar on seismic sources and environmental conditions associated with landslides, glaciers, and ice in Rocky Mountain National Park, which included hiking to 10,240′ elevation Lake Haiyaha for a view of the 28 June 2022 >1 Mm$^3$ Chaos Canyon landslide site. The seminar was led by Jon Achuff, geoscientist and president of Black Spruce Inc., along with Aster and Niklasson. Field seminar planning was carried out by USGS scientists Kate Allstadt, Rob Anthony, and Jeff Coe, who were unfortunately unable to attend the event.

**Figure 1.** SSA 2025 Environmental Seismology Co-Chairs Siobhan Niklasson (left) and Rick Aster. Credit: SSA. The color version of this figure is available only in the electronic edition.

**Figure 2.** SSA 2025 Environmental Seismology attendees on field seminar at Dream Lake, Colorado. Credit: Siobhan Niklasson. The color version of this figure is available only in the electronic edition.

The supplemental material consists of the topical meeting program, which was accurate as of 27 October 2025.

## Declaration of Competing Interests

The authors acknowledge that there are no conflicts of interest recorded.