Session Type	Date	Time	Room	Title	People
Town Hall	Monday, 9 December 2024	18:00 - 19:00	*206 (Convention Center)*	What's Next for K–16 Critical Zone Science Education? Celebrating Transformative Critical Zone Science Education and Outreach Programs	*Steve Holbrook, Virginia Tech, Dept. of Geosciences, Blacksburg, United States, Clifford S Riebe, University of Wyoming, Laramie, WY, United States, Emma L Aronson, University of California Riverside, Department of Microbiology and Plant Pathology, Riverside, CA, United States, Sean P Bemis, Virginia Polytechnic Institute and State University, Department of Geosciences, Blacksburg, United States, Bradley Carr, University of Wyoming, Laramie, United States, Claire E Lukens, University of California Merced, Life and Environmental Sciences, Merced, United States and Leonard Sklar, Simon Fraser University, Burnaby, Canada*
Poster	Monday, 9 December 2024	08:30 - 12:20	*Hall B-C (poster hall)*	Critical Zone Science Workshops for K-12 Educators as Catalysts for Curriculum Development and Educator Engagement	*Lily Eligator1, Jorden L Hayes2, Rachel Uecker3, Joel Moore4, Claire Welty5, Angela Hood6, Steve Holbrook1, Brady Flinchum7, Denise Burgett1, Benjamin Eppinger1, Shiv Mangal Gupta1, William Cummings3, Alan R. Berkowitz6, Russell Patrick Callahan8 and Clifford S Riebe9, (1)Virginia Tech, Dept. of Geosciences, Blacksburg, United States, (2)Dickinson College, Department of Geosciences, Carlisle, United States, (3)Clemson University, Clemson, SC, United States, (4)Towson University, Physics, Astronomy, & Geosciences, Towson, United States, (5)Center for Urban Environmental Research, Center for Urban Environmental Research and Education, Baltimore, United States, (6)Cary Institute of Ecosystem Studies, Millbrook, United States, (7)Clemson University, Clemson, United States, (8)University of Connecticut, Groton, CT, United States, (9)University of Wyoming, Laramie, WY, United States*
	Monday, 9 December 2024	08:30 - 12:20	*Hall B-C (Poster Hall) (Convention Center)*	Rapid Changes In Soil Development Of Previously Glaciate	*Ashlee Laura Denton Dere, University of Nebraska at Omaha, Geography/Geology, Omaha, NE, United States, Ilaria Baneschi, CNR Institute of Geosciences and Earth Resources, Pisa, Italy, Sharon A Billings, University of Kansas, Department of Ecology and Evolutionary Biology and Kansas Biological Survey and Center for Ecological Research, Lawrence, United States, Emma L Aronson, University of California Riverside, Department of Microbiology and Plant Pathology, Riverside, United States, Antonello Provenzale, Consiglio Nazionale delle Ricerche, Institute of Geosciences and Earth Resources (IGG), Pisa, Italy and Timothy S. White, Pennsylvania State University Main Campus, Earth and Environmental Systems Institute, University Park, PA, United States*
Townhall	Monday, 9 December 2024	08:30 - 12:20	*Hall B-C (Poster Hall) (Convention Center)*	Shaping the Future of Critical Zone Science: Advancing Transdisciplinary and Interagency Collaboration for a Resilient Planet	*Ashlee Laura Denton Dere, University of Nebraska at Omaha, Geography/Geology, Omaha, NE, United States, Ilaria Baneschi, CNR Institute of Geosciences and Earth Resources, Pisa, Italy, Sharon A Billings, University of Kansas, Department of Ecology and Evolutionary Biology and Kansas Biological Survey and Center for Ecological Research, Lawrence, United States, Emma L Aronson, University of California Riverside, Department of Microbiology and Plant Pathology, Riverside, United States, Antonello Provenzale, Consiglio Nazionale delle Ricerche, Institute of Geosciences and Earth Resources (IGG), Pisa, Italy and Timothy S. White, Pennsylvania State University Main Campus, Earth and Environmental Systems Institute, University Park, PA, United States*
	Tuesday, 10 December 2024	16:45 - 17:00	*150 B (Convention Center)*	Bottom-up Controls on Critical Zone Connectivity	*Steve Holbrook, Virginia Tech, Dept. of Geosciences, Blacksburg, United States, Clifford S Riebe, University of Wyoming, Laramie, WY, United States, Emma L Aronson, University of California Riverside, Department of Microbiology and Plant Pathology, Riverside, United States, Sean P Bemis, Virginia Polytechnic Institute and State University, Department of Geosciences, Blacksburg, United States, Bradley Carr, University of Wyoming, Laramie, United States, Claire E Lukens, University of California Merced, Life and Environmental Sciences, Merced, United States and Leonard Sklar, Simon Fraser University, Burnaby, Canada*
	Tuesday, 10 December 2024	16:30 - 16:45	*150 B (Convention Center)*	Connecting the Critical Zone through Interdisciplinary Insights and Data-Driven Research	*Julia N Perdrial1, Kristen Underwood2, Lauren Lowman3, Erin Cedar Seybold4, Niara Hicks5, Bren Cable5, Ijaz UL HAQ6, Shaurya Swami7, Camden Hatley8, Andrew Vierbicher9, Li Li10, Byung Suk Lee6, Bryn Stewart9, Isabel Ahlstrom11, Benjamin W Abbott12, James B Shanley13 and Donna M Rizzo14, (1)University of Vermont, Department of Geography & Geoscience, Burlington, VT, United States, (2)University of Vermont, Civil and Environmental Engineering, Burlington, United States, (3)Wake Forest University, Department of Engineering, Winston-Salem, NC, United States, (4)University of Kansas, Kansas Geological Survey, Lawrence, United States, (5)University of Vermont, Geography and Geosciences, Burlington, United States, (6)University of Vermont, Computer Science, Burlington, VT, United States, (7)University of Vermont, Department of Computer Science, Burlington, United States, (8)Kansas State University, Department of Geology, Manhattan, United States, (9)Pennsylvania State University Main Campus, Department of Civil and Environmental Engineering, University Park, United States, (10)Pennsylvania State University Main Campus, Department of Civil and Environmental Engineering, University Park, PA, United States, (11)University of Vermont, Burlington, United States, (12)Brigham Young University, Department of Plant and Wildlife Sciences, Provo, United States, (13) United States Geological Survey, New England Water Science Center, Montpelier, United States, (14)University of Vermont, Department of Civil and Environmental Engineering, Burlington, United States*
Town Hall	Tuesday, 10 December 2024	12:30 - 13:30	*207 B (Convention Center)*	Shaping the Future of Critical Zone Science: Advancing Transdisciplinary and Interagency Collaboration for a Resilient Planet	*Julia N Perdrial, University of Vermont, Department of Geography & Geoscience, Burlington, VT, United States, Bhavna Arora, Lawrence Berkeley National Laboratory, Earth and Environmental Sciences Area, Berkeley, CA, United States, Allison Eva Goodwell, Prairie Research Institute at University of Illinois at Urbana-Champaign, Champaign, United States, Emma L Aronson, University of California Riverside, Department of Microbiology and Plant Pathology, Riverside, United States and Gregory T Carling, Brigham Young University, Department of Geological Sciences, Provo, UT, United States*
Poster	Tuesday, 10 December 2024	08:30 - 12:20	*Hall B-C (Poster Hall) (Convention Center)*	Exploring Connectivity and Element Distribution in the Critical Zone Using Deep Cores Underneath Agricultural and Natural Drylands in American Southwest	*Angie Cano1, Mallory Salas2, Christian Leach2, Mark Engle1, Anthony Darrouzet-Nardi3, Lixin Jin4 and Lin Ma2, (1)University of Texas at El Paso, Department of Earth, Environmental, and Resource Sciences, El Paso, TX, United States, (2)University of Texas at El Paso, Department of Earth, Environmental, and Resource Sciences, El Paso, United States, (3)University of Texas at El Paso, Biological Sciences, El Paso, United States, (4)University of Texas at El Paso, Department of Earth, Environmental and Resource Sciences, El Paso, United States*
Poster	Tuesday, 10 December 2024	08:30 - 12:20	*Hall B-C (Poster Hall) (Convention Center)*	Do Trees in Dryland Agroecosystems Have Memory? Investigating The Ecophysiological Adaptations of Agroforests to Drought and Heatwaves Under the Modulating Influence of the Critical Zone Architecture	*Jesus Manuel Ochoa-Rivero1,2, Hugo Alberto Gutiérrez-Jurado3, Marguerite Mauritz4, Katya Esquivel Herrera1, Frida Garcia Ledezma1,5, Luisa Camacho-Medina1, Angel Ventura1, Victoria Martinez4, Anthony Darrouzet-Nardi4, Alan Alvarez-Holguin6, Federico Villarreal-Guerrero6, Linda Citlali Noperi-Mosqueda7, Omar Castor Ponce-Garcia2, Orlando Ramirez-Valle Sr8 and Lixin Jin1, (1)University of Texas at El Paso, Department of Earth, Environmental and Resource Sciences, El Paso, United States, (2) Instituto Nacional de Investigaciones Forestales, Agricolas y Pecuarias (INIFAP), La Campana Experimental Range, Aldama, Mexico, (3)University of Texas at El Paso, Department of Earth, Environmental and Resource Sciences, El Paso, TX, United States, (4)University of Texas at El Paso, Biological Sciences, El Paso, United States, (5)Stanford University, Doerr School of Sustainability, Stanford, United States, (6)Autonomous University of Chihuahua, Facultad de Zootecnia y Ecologia, Chihuahua, Mexico, (7) Autonomous University of Chihuahua, Facultad de Ciencias Agrotecnologicas, Chihuahua, Mexico, (8)Instituto Nacional de Investigaciones Forestales, Agricolas y Pecuarias (INIFAP), La Campana Experimenal Range, Cuauhtemoc, Mexico*
	Tuesday, 10 December 2024	16:00 - 17:30	*150 B (Convention Center)*	Critical Zone Connectivity: Driving Soil Processes Quantified by Linking Diverse Approaches II Oral	*Emma L Aronson, University of California Riverside, Department of Microbiology and Plant Pathology, Riverside, United States, Ashlee Laura Denton Dere, University of Nebraska at Omaha, Geography/Geology, Omaha, NE, United States, Brian Saccardi, University of Massachusetts Amherst, Geosciences, Amherst, United States, Asmeret Asefaw Berhe, University of California Merced, Life and Environmental Sciences, Merced, United States, Sharon A Billings, University of Kansas, Department of Ecology and Evolutionary Biology and Kansas Biological Survey and Center for Ecological Research, Lawrence, United States, Annalise Guthrie, University of Kansas, Department of Ecology and Evolutionary Biology and Kansas Biological Survey and Center for Ecological Research, Lawrence, KS, United States and Alexander Ederer, University of Arizona, Department of Environmental Science, Tucson, AZ, United States*
	Tuesday, 10 December 2024	16:00 - 17:30	*150 B (Convention Center)*	Critical Zone Connectivity: Driving Soil Processes Quantifie	*Emma L Aronson, University of California Riverside, Department of Microbiology and Plant Pathology, Riverside, United States, Ashlee Laura Denton Dere, University of Nebraska at Omaha, Geography/Geology, Omaha, NE, United States, Brian Saccardi, University of Massachusetts Amherst, Geosciences, Amherst, United States, Asmeret Asefaw Berhe, University of California Merced, Life and Environmental Sciences, Merced, United States, Sharon A Billings, University of Kansas, Department of Ecology and Evolutionary Biology and Kansas Biological Survey and Center for Ecological Research, Lawrence, United States, Annalise Guthrie, University of Kansas, Department of Ecology and Evolutionary Biology and Kansas Biological Survey and Center for Ecological Research, Lawrence, KS, United States and Alexander Ederer, University of Arizona, Department of Environmental Science, Tucson, AZ, United States*

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poster	Tuesday, 10 December 2024	08:30 - 12:20	*Hall B-C (Poster Hall) (Convention Center)*	Critical Zone Connectivity: Driving Soil Processes Quantifiec	*Emma L Aronson, University of California Riverside, Department of Microbiology and Plant Pathology, Riverside, United States, Ashlee Laura Denton Dere, University of Nebraska at Omaha, Geography/Geology, Omaha, NE, United States, Brian Saccardi, University of Massachusetts Amherst, Geosciences, Amherst, United States, Asmeret Asefaw Berhe, University of California Merced, Life and Environmental Sciences, Merced, United States, Sharon A Billings, University of Kansas, Department of Ecology and Evolutionary Biology and Kansas Biological Survey and Center for Ecological Research, Lawrence, United States, Annalise Guthrie, University of Kansas, Department of Ecology and Evolutionary Biology and Kansas Biological Survey and Center for Ecological Research, Lawrence, KS, United States and Alexander Ederer, University of Arizona, Department of Environmental Science, Tucson, AZ, United States*
Poster	Wednesday, 11 December 2024	08:30 - 12:20	*Hall B-C (poster hall)*	Using Sr and U isotopic tracers to identify water flow paths and solute sources in agricultural areas in Idaho: understanding agrohydrology processes of Dryland Critical Zone	*Jennifer Herrera, University of Texas at El Paso, El Paso, TX, United States, Lin Ma, The University of Texas at El Paso, Department of Earth, Environmental, and Resource Sciences, El Paso, TX, United States, Lixin Jin, University of Texas at El Paso, Department of Earth, Environmental and Resource Sciences, El Paso, United States, Jennifer L Pierce, Boise State University, Department of Geosciences, Boise, United States, David Bjorneberg, USDA Agricultural Research Service Kimberly, Kimberly, United States and David Huber, USDA, Kimberly, United States*
Poster	Wednesday, 11 December 2024	13:40 - 17:30	*Hall B-C (poster hall)*	The Role of Bedrock Properties in Controlling Critical Zone Structure	*Steve Holbrook, Virginia Tech, Dept. of Geosciences, Blacksburg, United States, Sean P Bemis, Virginia Polytechnic Institute and State University, Department of Geosciences, Blacksburg, United States, Bradley Carr, University of Wyoming, Laramie, United States, Brady Flinchum, Clemson University, Clemson, United States, Dario Grana, University of Wyoming, Department of Geology and Geophysics, Laramie, United States, Jorden L Hayes, Co-Author, Department of Earth Sciences, Laramie, United States, Ciaran J Harman, Johns Hopkins University, Environmental Health and Engineering, Baltimore, MD, United States, Seulgi Moon, University of California Los Angeles, Department of Earth, Planetary, and Space Sciences, Los Angeles, CA, United States, Clifford S Riebe, University of Wyoming, Laramie, WY, United States and Kamini Singha, Colorado School of Mines, Department of Geology and Geological Engineering, Golden, United States*
	Thursday, 12 December 2024	10:20 - 10:30	*146 A (Convention Center)*	High-Resolution Elastic Imaging of the Critical Zone Using Double-Component Full-Waveform Inversion	*Benjamin Eppinger and Steve Holbrook, Virginia Tech, Dept. of Geosciences, Blacksburg, United States*
Poster	Thursday, 12 December 2024	13:40 - 17:30	*Hall B-C (poster hall)*	Using Biweekly and Network Synoptic Water Quality Sampling to Evaluate Sources and Trends in the Urban Critical Zone.	*Mary McWilliams, University of Maryland Baltimore County, Center for Urban Environmental Research and Education, Baltimore, MD, United States, Joel Moore, Towson University, Physics, Astronomy, & Geosciences, Towson, United States, Daniel Bain, University of Pittsburgh Pittsburgh Campus, Department of Geology and Environmental Science, Pittsburgh, United States, Claire Welty, Center for Urban Environmental Research, Center for Urban Environmental Research and Education, Baltimore, United States, Emily O'Donnell, Towson University, Towson, MD, United States, Karen L Prestegaard, Univ Maryland, Department of Geology, College Park, United States, Laura Toran, Temple Univ, Philadelphia, United States and Kristina G Hopkins, USGS, South Atlantic Water Science Center, Raleigh, United States*
Poster	Thursday, 12 December 2024	13:40 - 17:30	*Hall B-C (poster hall)*	Advancing Critical Zone Science Across Sites and Scales Poster	*Bhavna Arora, Lawrence Berkeley National Laboratory, Earth and Environmental Sciences Area, Berkeley, CA, United States, Elizabeth W Boyer, Penn State University, Department of Ecosystem Science & Management, University Park, United States and Jeffrey S Munroe, Middlebury College, Earth and Climate Sciences, Middlebury, United States*
Poster	Thursday, 12 December 2024	13:40 - 17:30	*Hall B-C (poster hall)*	Coupling Backward Particle Tracking and Synoptic Stream Sampling to Infer Solute Sources in the Urban Critical Zone Across a Latitudinal Gradient	*Maryam Rishehri, University of Maryland Baltimore County, Baltimore, MD, United States, Claire Welty, Center for Urban Environmental Research, Center for Urban Environmental Research and Education, Baltimore, United States, Mary McWilliams, University of Maryland Baltimore County, Center for Urban Environmental Research and Education, Baltimore, MD, United States, Joel Moore, Towson University, Physics, Astronomy, & Geosciences, Towson, United States, Daniel Bain, University of Pittsburgh Pittsburgh Campus, Department of Geology and Environmental Science, Pittsburgh, United States, Emily O'Donnell, Towson University, Towson, MD, United States, Kristina G Hopkins, USGS, South Atlantic Water Science Center, Raleigh, United States, Karen L Prestegaard, Univ Maryland, Department of Geology, College Park, United States and Laura Toran, Temple Univ, Philadelphia, United States*
Poster	Thursday, 12 December 2024	13:40 - 17:30	*Hall B-C (poster hall)*	Chemical weathering and urban critical zone processes in the Eastern United States Piedmont	*Kyle Farrington, Towson University, Towson, MD, United States, Joel Moore, Towson University, Physics, Astronomy, & Geosciences, Towson, United States, Claire Welty, Center for Urban Environmental Research, Center for Urban Environmental Research and Education, Baltimore, United States, Daniel Bain, University of Pittsburgh Pittsburgh Campus, Department of Geology and Environmental Science, Pittsburgh, United States, Karen L Pretegaard, University of Maryland College Park, College Park, United States and Mary McWilliams, University of Maryland Baltimore County, Center for Urban Environmental Research and Education, Baltimore, MD, United States*
Poster	Thursday, 12 December 2024	13:40 - 17:30	*Hall B-C (poster hall)*	Hydrological Predictions and Causal Interpretability of a Spatiotemporal Graph Neural Network	*Aramide Moronfoye, University of Illinois at Urbana-Champaign, Urbana, IL, UNITED STATES and Praveen Kumar, University of Illinois at Urbana-Champaign, Department of Civil and Environmental Engineering, Urbana, United States*
Poster	Thursday, 12 December 2024	08:30 - 12:20	*Hall B-C (poster hall)*	Similarities and Differences in Major Ion Chemistry Among Piedmont Streams with Varying Urban Development	*Evelynn McNeil1, Ross Clark1, Karen L Prestegaard2, Claire Welty3, Laura Toran4, Mary McWilliams5, Joel Moore6, Daniel Bain7and Emily O'Donnell8, (1)University of Maryland College Park, Geology, College Park, United States, (2)Univ Maryland, Department of Geology, College Park, United States, (3)Center for Urban Environmental Research, Center for Urban Environmental Research and Education, Baltimore, United States, (4)Temple Univ, Philadelphia, United States, (5)University of Maryland Baltimore County, Center for Urban Environmental Research and Education, Baltimore, MD, United States, (6)Towson University, Physics, Astronomy, & Geosciences, Towson, United States, (7)University of Pittsburgh Pittsburgh Campus, Department of Geology and Environmental Science, Pittsburgh, United States, (8)Towson University, Towson, MD, United States*
Poster	Friday, 13 December 2024	08:30 - 12:20	*Hall B-C (poster hall)*	Intensive management redefines processes and predictability in the critical zone	*Allison Eva Goodwell1, Brian Saccardi1,2, Jennifer L Druhan3, Jinyu WANG4, Ashlee Laura Denton Dere5, Praveen Kumar6, Neal Edward Blair7, Bruce L Rhoads8, Erin Bauer9 and Andrew Stumpf10, (1)Prairie Research Institute at University of Illinois at Urbana-Champaign, Champaign, United States, (2)University of Massachusetts Amherst, Geosciences, Amherst, United States, (3) University of Illinois, Urbana Champaign, United States, (4)University of Illinois at Urbana-Champaign, Urbana, United States, (5) University of Nebraska at Omaha, Geography/Geology, Omaha, NE, United States, (6)University of Illinois at Urbana-Champaign, Department of Civil and Environmental Engineering, Urbana, United States, (7)Northwestern University, Evanston, United States, (8) University of Illinois Urbana-Champaign, Department of Geography & Geographic Information Science, Urbana, United States, (9) University of Illinois at Urbana Champaign, Prairie Research Institute, Champaign, United States, (10)Illinois State Geological Survey, Champaign, IL, United States*
Poster	Friday, 13 December 2024	08:45 - 08:57	*146 C (Convention Center)*	Hmmmm, where to start?: Conditions supporting the initiation of a critical zone on a bedrock surface and feedbacks driving expansion	*Sean P Bemis, Virginia Polytechnic Institute and State University, Department of Geosciences, Blacksburg, United States, Steve Holbrook, Virginia Tech, Dept. of Geosciences, Blacksburg, United States, Brady Flinchum, Clemson University, Clemson, United States, Brent T Aulenbach, U.S. Geological Survey Center for Integrated Data Analytics, Middleton, WI, United States, Russell Callahan, University of Connecticut, Department of Earth Sciences, Groton, United States, Ciaran J Harman, Johns Hopkins University, Environmental Health and Engineering, Baltimore, MD, United States, Jorden L Hayes, Dickinson College, Department of Geosciences, Carlisle, PA, United States, Bradley Carr, University of Wyoming, Laramie, United States and Clifford S Riebe, University of Wyoming, Laramie, WY, United States*
Poster	Friday, 13 December 2024	08:30 - 12:20	*Hall B-C (Poster Hall)*	Root Biomass and Soil Carbon of a Pecan Orchard in the Chihuahuan Desert Across Contrasting Parent Materials	Talveer Singh1, Isabelle Anselmo2, Lixin Jin3, Marguerite Mauritz1 and Anthony Darrouzet-Nardi2, (1)University of Texas at El Paso, Biological Sciences, El Paso, TX, United States, (2)University of Texas at El Paso, Biological Sciences, El Paso, United States, (3)University of Texas at El Paso, Department of Earth, Environmental and Resource Sciences, El Paso, United States
poster	Friday, 13 December 2024	08:30 - 12:20	*Hall B-C (Poster Hall) (Convention Center)*	Soil connectivity as a driver of microbial community structure	*Emma L Aronson1, Sharon A Billings2, Whendee L Silver3, Stephen C Hart4, Rachel E Gallery5, William H McDowell6, Kathleen A Lohse7 and Jon Chorover7, (1)University of California Riverside, Department of Microbiology and Plant Pathology, Riverside, United States, (2)University of Kansas, Department of Ecology and Evolutionary Biology and Kansas Biological Survey and Center for Ecological Research, Lawrence, United States, (3)University of California Berkeley, Department of Environmental Science, Policy, and Management, Berkeley, CA, United States, (4)University of California Merced, Life and Environmental Sciences, Merced, United States, (5)University of Arizona, School of Natural Resources and the Environment, Tucson, United States, (6)University of New Hampshire, Department of Natural Resources and the Environment, Durham, United States, (7)University of Arizona, Tucson, United States*