2025 National Soil Moisture Workshop Agenda

June 3-5, 2025

Colorado State University

Iris and Michael Smith Alumni Center, 701 W Pitkin St, Fort Collins, CO 80521

Hosted by the National Oceanic and Atmospheric Administration's National Integrated Drought Information System (NIDIS), in collaboration with the U.S. Department of Agriculture, the U.S. Forest Service, and Colorado State University

>> For virtual attendance: Zoom information is provided on the last page <<

Tuesday, June 03, 2025 – General Session Day 1 **Iris and Michael Smith Alumni Center**		
Time (MT)	**Topic**	**Speaker/Moderator**
8:30 a.m.	Welcome to Colorado State University and Fort Collins	Peter Goble – Colorado Climate Center, Colorado State University
8:40 a.m.	Welcome, Applications of Soil Moisture Theme	Elise Osenga – CIRES, University of Colorado Boulder/NOAA National Integrated Drought Information System
8:50 a.m.	National Coordinated Soil Moisture Monitoring Network (NCSMMN) Highlights and the Public Value of Soil Moisture Data	Mike Cosh – U.S. Department of Agriculture, Agricultural Research Service
Session 1: Networks & Expanding Soil Moisture Observations | Moderator: Mike Cosh		
9:00 a.m.	2025 Status of USFS Forest Soil Moisture Monitoring Network	Stephanie Connolly – U.S. Forest Service (USFS)
9:15 a.m.	Introducing Louisiana Climate & Digital Agricultural Network: Scope, Design, and Development	Vinit Sehgal – Louisiana State University
9:30 a.m.	Total Water Monitoring: The Upper Missouri River Basin Dataset as a Model	Nathan Edwards – South Dakota Mesonet, South Dakota State University
9:45 a.m.	Cropland Observatory Nodes (CRONOS): Proximal, Integrated Soil-Plant-Atmosphere Monitoring Systems	Tyson Ochsner – Oklahoma State University

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10:00 am	**Break – Coffee & Discussion Time (Posters go up)**	
Session 2: Tools & Approaches for Sharing & Communicating Data | Moderator: Elise Osenga		
10:30 a.m.	Opportunities for Improving Site-Based Soil, Weather, and Hydrological Data Access from a Centralized Data Platform	Toby Meierbachtol & Ashish Raval – Synoptic
10:45 a.m.	Building Scalable Tools for Interrogating Mesonet Datasets	Andres Patrignani – Kansas State University
11:00 a.m.	Calibration of Cosmic Ray Neutron Sensors: Approach and Data from Colorado	Tim Green – U.S. Department of Agriculture, Agricultural Research Service
11:15 a.m.	Soil Moisture with Perspective: Leveraging Long-Term Observations for Monitoring and Communication	McKenzie Peters – North Carolina State Climate Office
11:30 a.m.	An Assessment of Fractional Available Water as a Drought Monitoring Tool	Ronald Leeper – North Carolina State University
11:45 a.m.	Discussion and Panel Q&A	Moderator: Elise Osenga
11:55 a.m.	Soil Moisture Community Leadership Award Presentation	Mike Cosh – U.S. Department of Agriculture, Agricultural Research Service
12:00 Networking – Lunch Provided		
Session 3: Understanding Crop–Soil Moisture Relationships | Moderator: Peter Goble		
1:00 p.m.	Challenging Water Scarcity with Sustainability: Increase Your Yield with Eco-Friendly Polymer	Kenny Toyonaga – EF Polymer
1:15 p.m.	Permanently Installing Capacitance Probes Under Row Crops Provides the Data We Need to Enable Truly Accurate AI Models	David Sloane – Irrigronomy
1:30 p.m.	Developing Impacts-based Soil Moisture Thresholds for Agricultural Drought	Zhanassyl Teleubay – The Ohio State University

	Assessment Using Corn and Soybean Yield in the Midwestern U.S.	
1:45 p.m.	Discussion and Q & A	Moderator: Peter Goble
2:00	**Short Break**	
Session 4: Advancements in Modeled or Remote-Sensed Soil Moisture | Moderator: Mike Cosh		
2:15 p.m.	Estimation of Rootzone Soil Moisture by Combining Multiple Remote Sensing Products through Machine Learning	Jeff Niemann – Colorado State University
2:30 p.m.	Enhancing Rootzone Soil Moisture Dynamics Estimation with a State-Based Model	Frank Anyoka Adekilae – Louisiana State University
2:45 p.m.	Integrating Multimodal Remote Sensing and Machine Learning for Scalable, High-Resolution Soil Moisture Estimation	James Zollweg – State University of New York, Brockport
3:00 p.m.	NOAA Soil Moisture Products System	Jufu Yin – NOAA National Environmental Satellite, Data, and Information Service (NESDIS) STAR/University of Maryland
3:15 p.m.	Discussion and Q& A; Closing Comments	Moderator: Mike Cosh
Poster Session		
3:30 p.m. - 5:00 p.m.	Poster Session, Snacks, and Networking	
6:00 p.m.	Unhosted Happy Hour – The Colorado Room. *This is an unofficial gathering for anyone hoping to continue the day's conversations. Tables are not reserved, and drinks are on your own tab.*	

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Wednesday, June 4, 2025 – General Session Day 2 Iris and Michael Smith Alumni Center		
Time (MT)	**Topic**	**Speaker/Moderator**
Session 5: Thinking Beyond Sensors | Moderator: Elise Osenga		
8:30 a.m.	Schedule for the Day & Other Reminders	Elise Osenga, Peter Goble, Mike Cosh
8:45 a.m.	**Keynote:** Effective Water Resource Management – Including Soil Moisture on the Rosebud Indian Reservation: A Win-Win for the Tribe, the State, and the Nation	Syed Huq – Water Resources, Rosebud Sioux Tribe (Sicangu Lakota Oyate)
9:15 a.m.	Discussion and Q&A	Moderator: Elise Osenga
9:30 a.m.	Quantifying the Effects of Cultural Burning on Soil Moisture and the Water Balance in Northern California	Michelle Stern – U.S. Geological Survey
9:45 a.m.	CoCoRaHS and Visual Collection of Soil Moisture Information	Peter Goble - Colorado Climate Center, Colorado State University
10:00 a.m.	Facilitated Panel Discussion: Thinking Beyond Sensors	Syed Huq, Michelle Stern, Peter Goble Moderator: Elise Osenga
10:30 a.m.	**Coffee Break**	
Session 6: Soil Moisture Data for Decision-Making | Moderator: Mike Cosh		
11:00 a.m.	Rainfall and Soil Moisture Stations Network for Landslides Forecast Product in Puerto Rico	Pedro Matos Llavona – Puerto Rico Landslide Hazard Mitigation Office / University of Puerto Rico Mayagüez
11:15 a.m.	NASA NLDAS-3: Next-Generation Land Data Assimilation System to Support North American Water-Informed Decisions	Jonathan Case – University of Alabama Huntsville
11:30 a.m.	Working Irrigation Water Requirement Using Soil Moisture in Crops	Hemendra Kumar – University of Maryland

11:45 a.m.	Producer Engagements to Promote the Adoption of Soil Moisture Sensors and Effective Data-Driven Decisions through an Irrigation Outreach Program	Abia Katimbo – University of Nebraska, Lincoln
12:00 p.m.	Facilitated Panel Discussion – Barriers and Opportunities in Adoption of Information/Technologies	Pedro Matos Llavona, Jonathan Case, Hemendra Kumar, Abia Katimbo Moderator: Helen Silver – Ground Up Consulting, LLC/ IN-RICHES, Colorado State University
12:30 p.m.	Group Picture	Mike Cosh
12:45 p.m.	**Lunch**	
1:15 p.m.	**Working Lunch – Communicating Your Science –** Eleanor Hasenbeck (CIRES, University of Colorado Boulder/NOAA National Integrated Drought Information System)	
Session 7: Tracking Drought | Moderator: Elise Osenga		
1:45 p.m.	**Keynote**: Beyond the Surface: How Soil Moisture Monitoring Informs Water Supply Decisions Across the Basin	Rebecca Breismoore – Colorado River Water Conservation District
2:15 p.m.	Discussion and Q&A	Moderator: Elies Osenga
2:30 p.m.	Soil Moisture as a Key Variable in Impact-Based Agricultural Drought Monitoring	Koushan Mohammadi – University of Connecticut
2:45 p.m.	Soil Moisture Data Value Study Sensitivity Analysis in the Upper Missouri River Basin	Jackie Beck – The Ohio State University
3:00 p.m.	Panel Discussion and Q & A	Moderator: Elise Osenga
3:15 p.m.	**Coffee Break – Free Discussion Time**	
3:45 p.m.	Group Reflection: Gaps, Opportunities, and Next Steps Needed to Improve Applications of Soil Moisture Information	Elise Osenga, Mike Cosh, Peter Goble, Stephanie Connolly
4:15 p.m.	Instructions for June 5 Field Trip	Stephanie Connolly – U.S. Forest Service
4:20 p.m.	Closing Remarks	Mike Cosh, Elise Osenga
4:30 p.m.	**End of Day**	

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Due to limited space, we can only allow those who have registered to attend the field trip.
Full directions for the field trip will be provided to field trip registrants directly.

Thursday, June 5, 2025 – Field Trip – Prior Registration Required for Attendance		
Time (MT)	**Topic**	**Speaker/Moderator**
8:00 a.m.	Gather for Vans at Designated Location. Vans Will Load at 8:15 a.m. Promptly.	
8:30 a.m.	Vans Depart Promptly at 8:30 a.m.	
3:30 p.m.	**Return to Campus/End of Day**	

2025 National Soil Moisture Workshop - Keynote Speakers

Syed Huq

About the Speaker:

Syed Huq is the Director for Mni Wiconi Rural Water and Water Resources of the Rosebud Sioux Tribe (Sicangu Lakota Oyate). He is a Founding Member, Board Member, and former Vice President of the Great Plains Tribal Water Alliance and holds a bachelor's degree from the University of Dhaka and master's degrees from the University of Dhaka and South Dakota School of Mines and Technology. Syed's work encompasses both water quality and water supply, and he has published widely on the importance of water in relation to health, community, and the environment.

About the Talk:

Effective Water Resource Management: Including Soil Moisture on Rosebud Indian Reservation – Win-Win for the Tribe, the State and the Nation

There are over 535 Federally recognized Indian Tribes in the United States, spread all over the 50 states. It is imperative that water, including soil moisture, which is so closely intertwined with water resources, be effectively managed on Indian Reservations. These sovereign nations are located in pockets within and across states. Leaving relationships unattended can do tremendous harm to the respective Tribes, States, and the Nation in general. A united and side-by-side approach that avoids jurisdictional conflict and where partners and partner work complement each other can serve the Tribes, the States, and the Nation immensely from an economic and environmental standpoint.

Rebecca Breismoore

About the Speaker:

For as long as she can remember, Rebecca Briesmoore has loved water and soil. Growing up along the Mississippi River, she developed an early passion for water and spent her youth with her hands in soil—digging streams in sandpiles, testing soil composition, and sowing seeds in the rich Iowa earth. Now, as a Water Resources Engineer/Project Manager with the Colorado River District, Rebecca brings that lifelong passion to her work, focusing on sustainable water management and protecting the long-term health of Colorado's west slope rivers and communities. She holds a Civil Engineering degree from Iowa State University and previously worked as a Hydraulic Engineer for the U.S. Army Corps of Engineers in Illinois. After moving to Colorado, she earned a master's degree in Environmental Management from Western Colorado University. Rebecca lives in Rifle, Colorado with her husband and enjoys gardening, hiking, and paddleboarding.

About the Talk:

Beyond the Surface: How Soil Moisture Monitoring Informs Water Supply Decisions Across the Basin

We know that a better understanding of soil moisture conditions is key to more accurately predicting water availability for the millions of people who depend on the Colorado River. The Colorado River District's Community Funding Partnership grant program has been able to support a variety of soil moisture monitoring projects to improve local water management decision-making capacity by reducing uncertainty in snowmelt runoff predictions. These projects also support broader basin-wide water supply planning.

National Soil Moisture Workshop Poster List

June 3, 2025 – 10:15 am - 5:00 pm

Optimizing Soil Moisture Sensor Installation Depths
Ali Ashrafi, Oklahoma State University

Enhancing Rural Resilience by Leveraging Public-Available Soil Moisture Data from Sensor Networks
Arturo Flores, Oklahoma State University

An Investigation into the Utility of Soil Moisture from CYGNSS to Aid in the Quantification of Wildfire Risk and Modeled Fire Spread in California
Clara Chew, Muon Space

Commonly Measured Soil Properties Can Be Used to Predict Soil-Specific Soil Moisture Sensor Calibrations with Moderate Accuracy
Edward Ayres, National Ecological Observator Network (NEON)

Impact of Biochar Application on the Hydro-Physical Properties of Silty Loam (Student Awaiting Travel Support)
Emmanuella Tudzi, Kentucky State University

The Role of Distributed Soil Parameters in Improving Hydrologic Simulations for a Small Watershed with Downstream Flood Risk
Endalkachew Gelaw, Stevens Institute of Technology

Assessing the Applications of Bare Soil and Sod-Covered Soil Moisture Datasets
Ethan Becker, Oklahoma Climate Survey/Oklahoma Mesonet

Relating Soil Moisture and Canopy Temperature Under Different Irrigation Regimes for Improved Agricultural Water Management
Hope Njuki Nakabuye, Texas A&M, AgriLife Research Center

Ecological Drought Climatology for Mid-Atlantic U.S.
Jackie Beck, The Ohio State University

Soil Water Retention Curve Using a Dielectric Permittivity Regression
Keith Bellingham, Stevens Water Monitoring Systems, Inc.

Developing Colorado's Soil Moisture Monitoring Network
Levi Johnson, Colorado State University

Deep Percolation Losses Associated with Automated Surge Irrigation Systems in the Intermountain West
Ngoni Mufute, Utah State University

National Soil Moisture Workshop Poster List - Continued

Master Irrigator Program Leads to Increased Adoption Rate of New Technologies for Irrigation Management
Phillip Edwards, University of Georgia, Cooperative Extension Area Water Agent

Leveraging Remote Sensing Data for Management Zone Delineation in the Agricultural Western U.S.
Rahel Pommerenke, Colorado State University

Investigating Soil Moisture Impacts on Precipitation through Statistical Modeling
Ruixuan Ding, Ohio State University

How Accurate Are Default Calibrations for the Most Common Soil Moisture Sensors?
Seyedali Azizi, Texas A&M University

Long-Term Soil Moisture Measurements and Field Evaluation of SoilVue10 Sensor at Atmospheric Radiation Measurement (ARM) User Facility
Sujan Pal, Argonne National Laboratory

Estimating Evapotranspiration of Various Agricultural Water Optimization Practices Using Soil Moisture Sensors
Tejinder Singh, Utah State University

Use of Low-Cost Surface Observation Networks to Support Agriculture Decision Support Applications
William Nicewonger, University Corporation for Atmospheric Research (UCAR), 3D Printed Automatic Weather Stations (3DPAWS)

Intensive Storms and Reactive Soils: Tropical Soil Moisture Behavior from 5-Minute Observations in Hawai'i
Yen-Wei Pan, University of Hawaii at Manoa

Rainfall-Based Gap Filling and Extension of Soil Moisture Records
Mike Cosh, U.S. Department of Agriculture, Agricultural Research Service

Developing a Soil and Atmospheric Monitoring Plan for Missouri
Zack Leasor, University of Missouri, Missouri Climate Center

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Virtual Attendance

Password and login provided via email