



# Landslides VIRTUAL SYMPOSIUM

May 19, 2026 - [www.aegevents.org](http://www.aegevents.org)

## AEG 2026 Landslides Virtual Symposium Program

From Detection to Decisions: Emerging Methods for Landslide Detection, Characterization, Monitoring, Early Warning, and Event Response

May 19, 2026

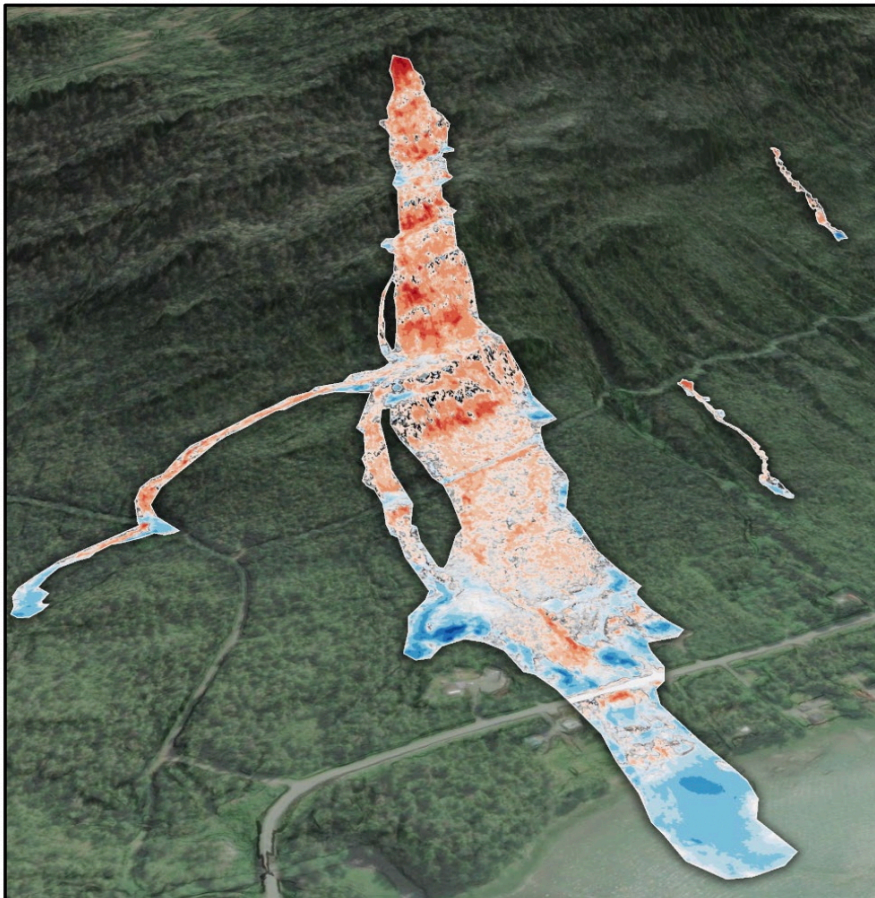
10:00am-2:15pm Mountain Time

(The session will be recorded for paid attendees to view anytime. 4 PDHs available)

Convened by AEG's Landslides Technical Working Group

Moderated by Cole Rosenbaum and James Arthurs

Landslide practice is rapidly shifting from being data-limited to interpretation-limited, as repeat topography, satellite observations, and image-based monitoring become easier to access and more scalable. This symposium will provide an applied, state-of-the-practice overview of emerging methods for landslide detection, characterization, and monitoring that professionals can use today across project scales, from regional screening to site investigations, damage and socio-economic impacts, and the laws, regulations, and management policies spawned by this growing global hazard.



Landslides identified by lidar data after the November 20, 2023, precipitation event in Wrangell, Alaska.

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**On the Cover**

Photo Landslides identified by lidar after the November 20, 2023, precipitation event in Wrangell, Alaska. Photo Credit: Alaska Department of Natural Resources

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*"I am a member of AEG because it is a professional organization that helps me grow my network and my education in the environmental, engineering and geology world. As a chapter board member, it's great to see people learning and networking with others during events and socials."*

- Luke Ducey, WSP USA



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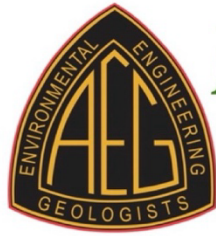
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# Landslides

## VIRTUAL SYMPOSIUM

May 19, 2026 - [www.aegevents.org](http://www.aegevents.org)

### SYMPOSIUM SCHEDULE

Association of Environmental & Engineering Geologists

10:00am-2:15pm Mountain Time

#### Moderators:

Cole Rosenbaum, BGC Engineering

James Arthurs, Federal Highway Administration

Time	Title	Speaker
10:00am	<b>Introduction</b>	Cole Rosenbaum and James Arthurs
10:05am	Harnessing Satellite-Based Monitoring and Global Hydroclimatic Datasets to Support Operational Regional Landslide Forecasting	Corey Froese, Wavelength Advisory Services
10:35am	Hindcasting Landslides after Hurricane Helene	Thomas Stanley, NASA Goddard Space Flight Center
11:05am	Creating Rapid Landslide Inventories Across Large Areas with Deep Learning and Lidar Change Detection Data	Corey Scheip, BGC Engineering
11:35am	UAS Photogrammetry Change Detection for Monitoring Coal Fire-Induced Surface Deformation	Jessie Hiatt, Colorado School of Mines
12:05pm	<b>Break</b>	
12:20pm	Studying Rockfall with Remote Sensing in 2026: What's New, What Works, and What It Changes	Luke Weidner, BGC Engineering
12:50am	Landslide Instrumentation Selection	Andre Silva, Orica
1:20pm	Comparing Pre- and Post-Event Lidar Data of the November 2023 Landslides on Wrangell Island, Alaska	Jillian Nicolazzo, Alaska Department of Natural Resources
1:50pm	QA/Panel Discussion	All Presenters
2:10pm	<b>Closing Discussion</b>	Cole Rosenbaum and James Arthurs



**James Arthurs, PhD**  
Senior Geotechnical Engineer, FHWA

James strives to apply his knowledge and skills in geology and engineering to help the public live and build safely in a world rich in hazards. To that goal, he earned a B.Sc. in Geological Engineering from the Colorado School of Mines, focusing on engineering geology, geotechnics, and hydrogeology. James moved to New Zealand, and started work towards a Ph.D. in Geology, his research focused on landslides in volcanic ash, volcanoclastics, and volcanic derived sediments. Upon completing his Ph.D., he moved back to Colorado and went to work for a local geotechnical firm, starting as a construction inspector and working his way up to a project engineer responsible for design of MSE retaining walls for large, complex commercial and residential sites. Along the way, he helped coordinate and conduct subsurface investigations for the Eagle P3 FasTracks project, a recent major commuter rail build out in Denver. At this point, he had an opportunity to join Federal service at the Office of Federal Lands Highway. Since then, he has worked on a variety of complex and technically challenging projects with a variety of local and Federal projects. James won the Young Author Award at the 2017 Highway Geology Symposium for his paper on construction on weathered volcanic ash in Hawai'i. James is active in the Association of Engineering Geologists, serving as his local Chapter Chair in 2019-2021, and Co-Chair of the Landslide Technical Working Group from 2022 to present.



**Cole Rosenbaum, M.Sc., P.E.**  
Senior Geological Engineer, BGC Engineering

Cole is a Senior Geological Engineer with BGC Engineering in Golden, Colorado, with over ten years of experience specializing in landslide and geohazard investigations, mitigation design, construction support, and geohazard asset management programs for linear infrastructure across North America. He holds B.Sc. and M.Sc. degrees in Geological Engineering from the Colorado School of Mines and is licensed as a Professional Engineer in multiple U.S. states. Since joining BGC in 2017, Cole has worked across many aspects of landslide practice, from field investigations and data analysis to developing geotechnical models, designing mitigation measures, and providing construction oversight and quality assurance. His experience includes desktop landslide inventories using lidar and satellite imagery and pipeline strain data; detailed subsurface investigations with drilling, test pits, and instrumentation; and hands-on construction support where designs were adapted to observed site conditions. He has also worked on landslide investigations in Yellowstone National Park, where landslides are addressed in a setting that underscores both the complexity and importance of the work. Cole has served as project manager and technical lead on landslide projects impacting pipelines in the Appalachian Plateau and throughout North America, and he balances technical practice with project, staff, and office leadership as an office manager overseeing a multidisciplinary team. He is an active member of the Association of Environmental and Engineering Geologists and has served as Co-Chair of the AEG Landslide Technical Working Group from 2024 to present.

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**Corey Froese, P.Eng., P.Geo**  
*Wavelength Advisory Services*

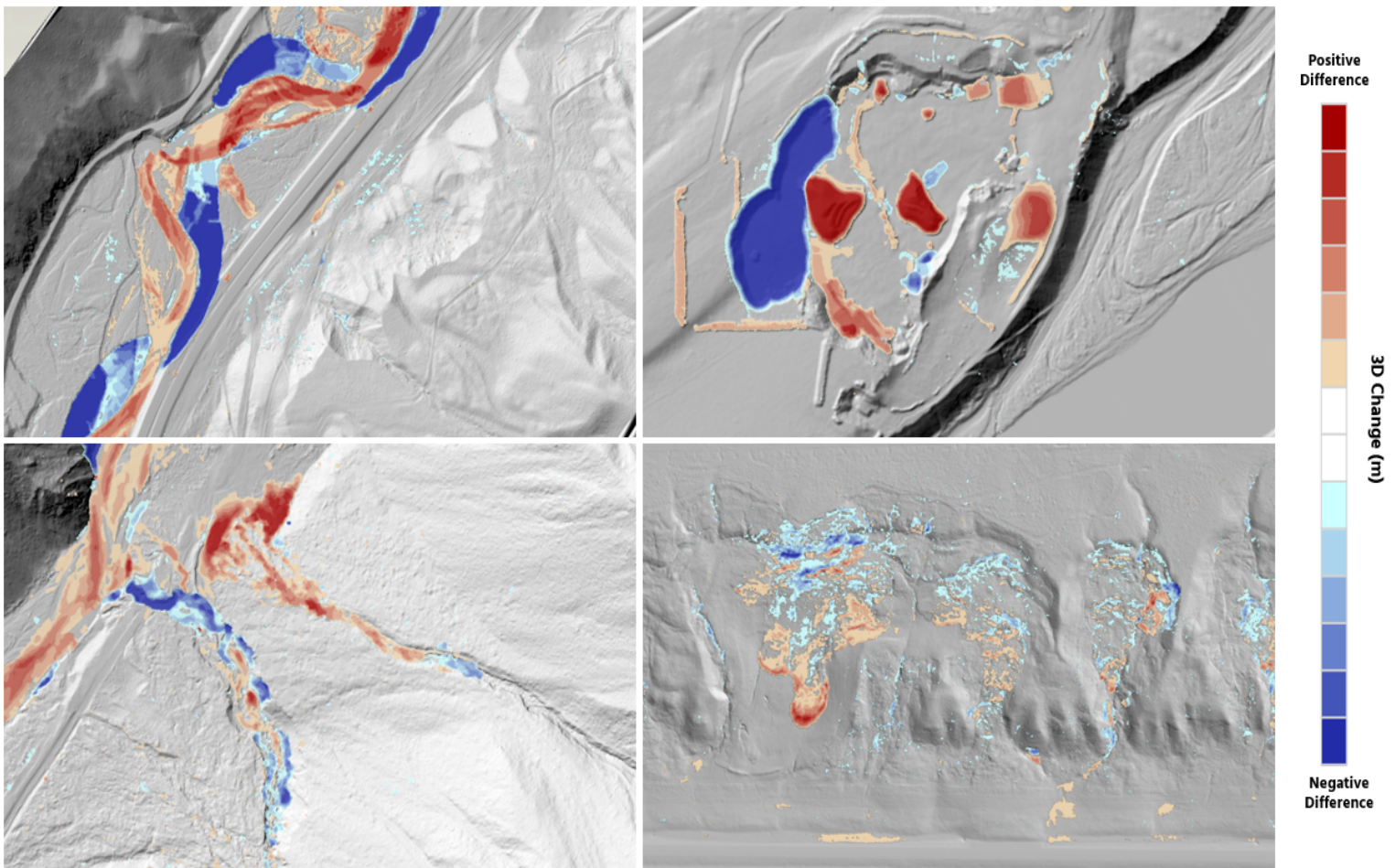
Corey Froese is a Principal Geological Engineer with Wavelength Advisory Services (Edmonton, Alberta) and has over 30 years of experience focused on risk management related to geological hazards with a focus on application of remote sensing applications. Corey leads teams in developing regional scale warning systems to integrate regional displacement trends data, cloud-based geospatial climatic data and data analytics to support the development of regional awareness and warning models. Corey's expertise has been recognized internationally through his roles as an

expert advisor for the Norwegian government and Canadian Space Agency and as an Adjunct Professor at the University of Alberta.

**Abstract:**

**Harnessing Satellite-Based Monitoring and Global Hydroclimatic Datasets to Support Operational Regional Landslide Forecasting**

Over the past five years, parallel projects in Western Canada, Washington State and the Appalachian Plateau have utilized a combination of remote and in-situ data coupled with historical hydroclimatic data obtained from both re-analysis models and measurements. By developing a historical understanding as to the drivers for landslide activity, these drivers can be integrated into awareness and forecast models to support enhanced understanding of temporal and spatial patterns to support operational decisions. This presentation provides an overview of the key learnings and opportunities presented with the advent of new datasets.





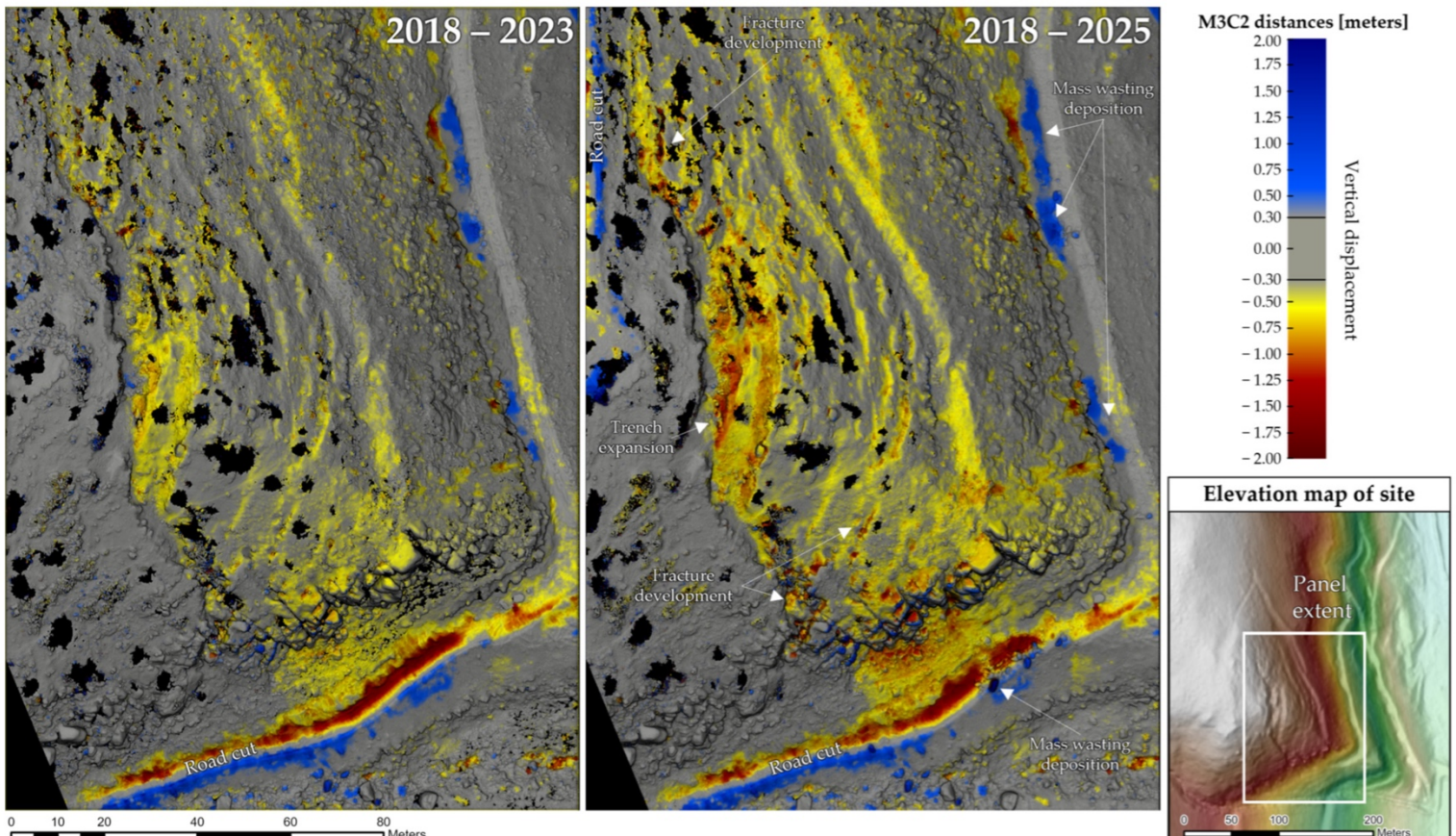
**Jessie Hiatt**  
*Colorado School of Mines*

Jessie is a PhD candidate in Geological Engineering at Colorado School of Mines, where she also earned an M.S. in GIS and Geoinformatics and a B.S. in Geological Engineering. She is co-advised by Dr. Wendy Zhou and Dr. Lesli Wood. Her doctoral research focuses on integrating drone, satellite, and terrestrial-based datasets to characterize the surficial spatial and temporal dynamics of underground coal fires. Her work supports monitoring, hazard characterization and reclamation planning at legacy coal fire sites and abandoned mine lands across the western United States. She also works as a geologist and GIS analyst at Tetra Tech, supporting coal fire mitigation, mine reclamation, and geohazard assessment projects through field investigations and geospatial modeling.

**Abstract:**

**UAS Photogrammetry Change Detection for Monitoring Coal Fire-Induced Surface Deformation**

Unmanned Aerial Systems (UAS) provide a flexible and repeatable approach for collecting high-resolution remote sensing data in steep, unstable, or difficult-to-access terrain. This presentation highlights the use of UAS-based photogrammetry to evaluate coal fire-induced surface change and terrain instability in western Colorado. Optical UAS imagery collected between 2018 and 2025 was processed using photogrammetry to generate orthomosaics and point clouds. Orthomosaics were used to visually assess the development of fractures, subsidence features, landcover change and slope instability, while point-cloud comparison methods were used to quantify terrain deformation through time. This workflow links visual site interpretation with quantitative 3D change detection to document terrain evolution and support geohazard monitoring in complex and hazardous landscapes.



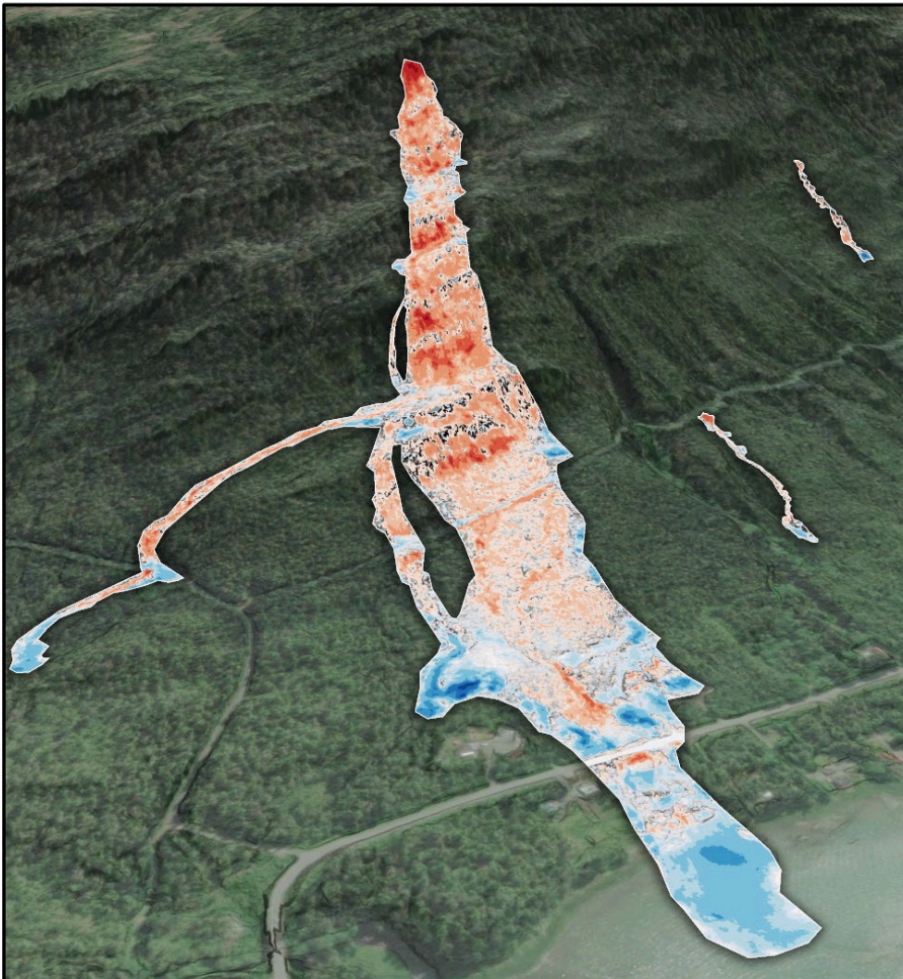


**Jillian Nicolazzo**  
*Alaska Department of Natural Resources*

Jillian Nicolazzo graduated from the University of Alaska, Fairbanks, with a B.S. in geological engineering and is currently the Acting Program Manager of the Landslide Hazards Program for the State of Alaska. Jillian works with partner agencies to map landslides across the state, assess and model landslide hazards, and communicate these hazards to communities. Prior to this, Jillian worked at the Department of Transportation & Public Facilities as an engineering assistant, where she contributed to bridge foundation design, and led the unstable slopes program, as part of the Asset Management team.

**Abstract:**  
**Comparing Pre- and Post-Event Lidar Data of the November 2023 Landslides on Wrangell Island, Alaska**

Two large rain-induced landslides occurred late in the evening on November 20, 2023, on Wrangell Island, Alaska. The largest buried part of the Zimovia Highway, destroyed homes, resulted in six fatalities, and caused long-lasting impacts to the community. In this study, we compared pre- and post- event lidar datasets to quantify landslide volume and spatial extent. By differencing these high-resolution digital elevation models, we identified and mapped areas of erosion and deposition, which allowed us to also identify two previously unknown landslides in the area. These results highlight the importance of baseline lidar data, and the value of repeat lidar surveys for detecting landscape change and hazard assessment.



Landslides identified by lidar data after the November 20, 2023, precipitation event in Wrangell, Alaska.





## **André Silva**

### *Measurand*

André Silva is a civil engineer with a master's degree in Geotechnics from the Faculty of Engineering of the University of Porto (FEUP), Portugal. He has over 15 years of international experience across different countries specializing in geotechnical instrumentation and monitoring for mining, dams, tunnels, slopes and civil infrastructure.

He currently works at Orica Digital Solutions as part of the Technical Services / Support Management team at Measurand, where he provides global technical support, with a strong focus on automated monitoring systems, data quality, system integration, and field implementation, particularly in Latin America. André is President of the Technical Commission for Geotechnical Instrumentation and Monitoring (CT-IMG) of the Brazilian Geotechnical Society (ABMS) and an active member of the Portuguese Geotechnical Society (SPG). He also represents Brazil in the ISSMGE International Technical Committee TC220, dedicated to Geotechnical Instrumentation and Monitoring, contributing to international technical discussions, guidelines, and knowledge dissemination.

### **Abstract:**

#### **How to Select the Best Inclinometer Solution for Landslide Monitoring**

Choosing the right inclinometer system is one of the most important steps in developing an effective landslide monitoring plan. With options such as Manual Inclinometer surveys, In-Place Inclinometers (IPI), and ShapeArray/Segmented Automated Arrays (SAA), each technology offers different advantages depending on the monitoring objectives, site conditions, expected displacement rates, and project constraints. This presentation will discuss the main factors that should guide the selection process and present a practical comparison of each solution, helping engineers and monitoring professionals understand which technology is best suited for different landslide applications. The session will provide a structured approach to selecting the most appropriate system to improve data quality, optimize monitoring strategy, and support better geotechnical decision-making.



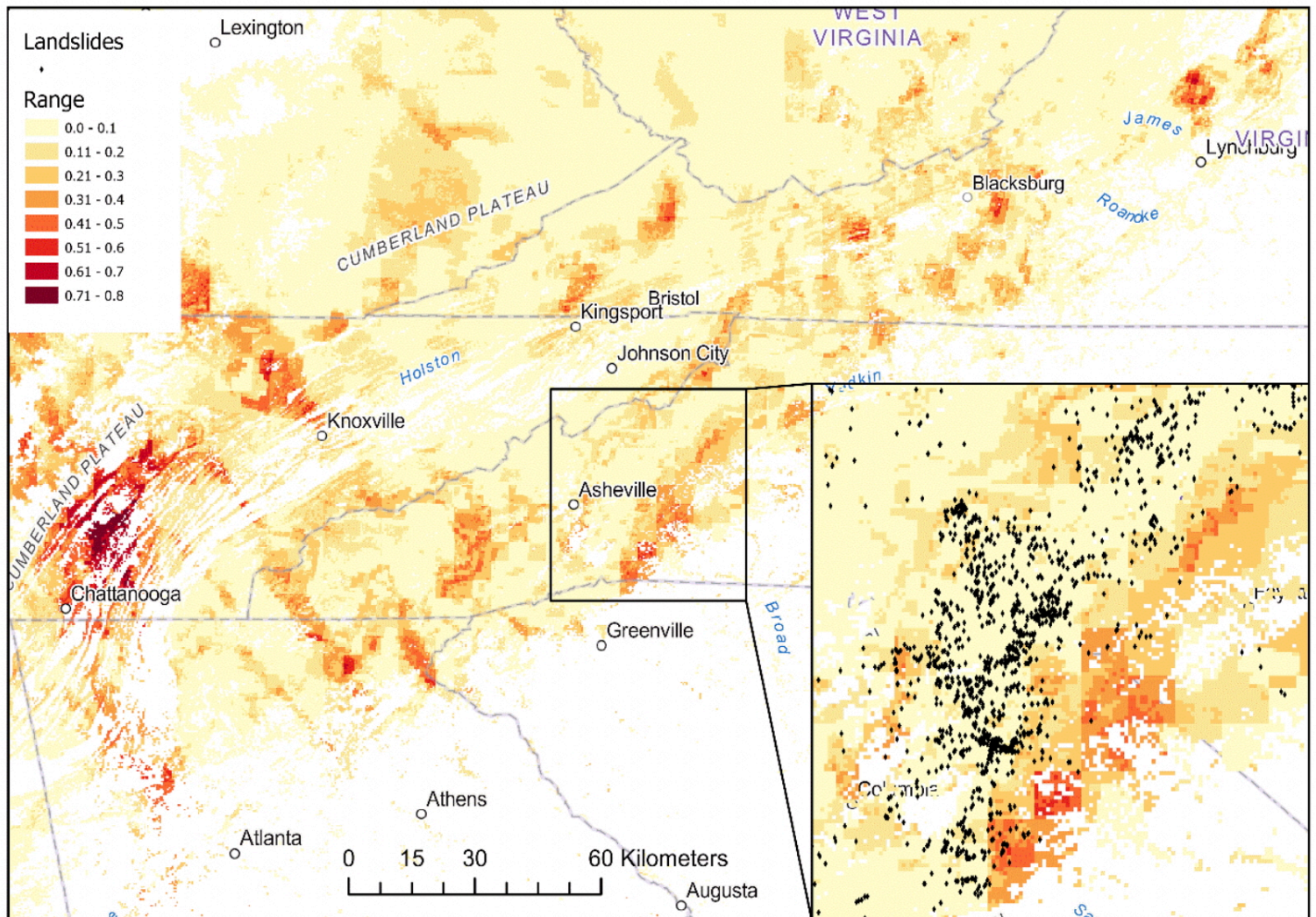


**Thomas Stanley**  
NASA, Goddard Space Flight Center

Thomas Stanley graduated from the University of Maryland in 2014 with a Masters in Geospatial Information Sciences. In the years since, he has collaborated with other scientists at Goddard Space Flight Center to develop static and dynamic models of landslide hazard at global and regional scales. These models rely on satellite-based estimates of precipitation, as well as remotely sensed observations of other variables.

**Abstract:**  
**Hindcasting Landslides after Hurricane Helene**

In September 2024, a global landslide forecast showed the potential for widespread landsliding in the Southern Appalachians after the landfall of Hurricane Helene. As the disaster unfolded, it became clear that thousands of landslides occurred, primarily in western North Carolina. Although most landslides were reported in areas that had been predicted, the forecast also included large areas not known to be heavily impacted. Therefore, a review of the model began, including an assessment of precipitation data. For each candidate precipitation forecast, the distribution of rainfall was compared to ground-based datasets, and the hindcasted effects on landslide hazard assessment were evaluated. This experiment demonstrated that multiple high-resolution forecasts could have better captured the spatial distribution of landslides in this event.





**Luke Weidner, Ph.D., P.E.**

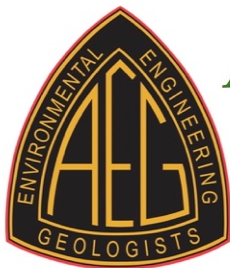
*BGC Engineering*

Luke Weidner is a Geological Engineer whose work centers on remote sensing applications in landslide, rockfall, and erosion research. He earned both his B.Sc. and Ph.D. in Geological Engineering and has been with BGC Engineering since 2021. He also holds a research associate position at the Colorado School of Mines. His work spans a range of frontiers in geohazard monitoring and analysis, from low-cost automated rock slope monitoring systems to 3D time-dependent hydraulic modeling of rock scour to advances in 3D change detection algorithms.

**Abstract:**

**Studying Rockfall with Remote Sensing in 2026: What's New, What Works, and What It Changes**

Rockfall monitoring has shifted from technology-limited to data-rich over the past decade, with lidar, photogrammetry, photomonitoring, and Doppler radar now making data collection routine. The bottleneck became analysis, but that is also changing. Advances in 3D displacement tracking, AI image interpretation, and machine learning point cloud classification now enable automated detection across large networks at low cost. This presentation reviews sensor selection principles, core monitoring objectives, and how these algorithmic developments are making continuous automated rockfall detection operationally feasible for any program that can fund data collection.



*AI/Machine Learning*

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**12:00pm-4:00pm Eastern Time**

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