

The Official

AEG OREGON CHAPTER NEWSLETTER

<http://www.aegoregon.org>

Meeting Details:

Date: Tuesday, February
20th, 2024 7:00 pm Hybrid

RSVP

In-Person \$25 Cash or
check.
Cards please use link above.

Old Market Pub
6959 SW Multnomah Blvd.

Agenda:

5:30- 6:30 pm social
6:30-7:00 pm dinner
7:00 pm presentation

UPCOMING MEETINGS:

March 5, 2024-- Jahns
Distinguished Lecturer
Cynthia Palomares

April 16, 2024--AEG
President Sarah Kalika

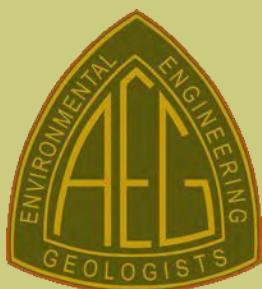
May 2024--Student Poster
Night

The Role of Trees in Progressive Rock Failure

Jill A. Marshall, Portland State University



In thin-soiled settings, we presume that trees play a significant role in converting rock into mobile sediment via physical weathering, with most models centered on tree throw. However, little is known regarding how - or how often - trees damage rock. Combining novel force sensors at the tree-rock boundary with precipitation, solar radiation, wind, tree sway, and acoustic emission data, I have begun to quantify tree-driven rock damage mechanisms. Charismatic tree throw may matter less than belowground damage. Results suggest that while wind forces matter, conifers bang repeatedly on rock while bendy deciduous trees can dampen wind loads significantly. Field data and physical modeling shows that even daily root water uptake can generate significant cracking. Finally, I will posit (speculate wildly) that current soil production functions should be recast to consider a 'Middle Earth' production function, one that combines disturbance agents like trees and water from above with non-steady fracture mechanics from below. This recasting might unify conflicting soil production functions (humped vs. exponential) and provide a framework for a more general theory of how bedrock vs. soil-mantled landscapes emerge and persist under steady state conditions – as well as provide insight as to the why and when rock cracks and fails under subcritical cracking conditions.



*Geologists have a
saying - rocks
remember.*

Neal Armstrong



Dr. Marshall is a geomorphologist and Critical Zone scientist. The Critical Zone is the life-sustaining, constantly evolving, surface and near-surface earth region extending from the top of the vegetative canopy where it intersects with the atmosphere to the subsurface limit of groundwater. Her research delves deeply into the role of biota, climate and lithology (or more specifically rock properties) in determining the rates and styles of surface processes through time. Broadly, her current work centers on two overlapping themes: 1) how variations in rock properties and climate-mediated changes in processes (such as bedrock weathering via trees vs. frost) control the rates and style of landscape evolution starting with progressive rock failure, and 2) dis-entangling the legacy of Pleistocene glacial intervals in regions that remained unglaciated during cold intervals. She has a particular interest in how past processes shape modern sub-surface architecture (e.g. fracturing and porosity) of the Critical Zone as the physical architecture supports diverse functions such as hydrologic routing, net primary productivity, carbon and water storage, and mineral supplies for the geochemical reactor. She has recently started working in the Arctic – where the trees are short but the opportunity to study frosty vs. more temperate processes in a warming world is dishearteningly outstanding.

Before returning to school for her PhD, Dr. Marshall worked for several decades on applied problems in water quality, with a focus on watershed and stream studies, and restoration design. As a stream specialist for the State of California, she pioneered the development of stream protection policies, developed stream monitoring and restoration trainings for both urban and rural communities, led studies on mercury transport in rivers, designed effective mercury containment projects at an abandoned mercury mine and developed water quality standards to protect fish-eating birds and humans from ill health effects due to eating mercury-contaminated fish. She is looking forward to (re) learning more about the wonderful Oregon landscapes and continuing her recent work meshing findings from experimental rock physics on crack propagation with improving predictions on near-surface properties and bedrock to sediment production via the trajectory of fracturing, porosity, and permeability attributes through time.



Message from the Chapter Chair

Happy February Oregon Chapter Members,

I want to start out this month's newsletter with a big thank you to all of you for your resiliency during the winter weather that wreaked havoc in our region for a few days at mid-month. We were anxiously paying close attention to weather forecasts, trying to decipher whether it would create unsafe conditions for a drive over the river and through the woods to the Old Market Pub. Turns out we made the correct decision to delay our annual joint meeting with ASCE. I also want to send out a huge thank you to our speakers, Eric Paslack, James Walters, and Tom Braibish. Not only were they willing to pivot to a later date at the last minute, but they also permitted us to record their presentation so that folks that couldn't attend the original date would be able to view it later. Thank you gentlemen! If you, like myself, were unable to attend the January meeting, you can view a recording of their presentation here:

<https://drive.google.com/file/d/1jIDw96TAD6IOqXfKqbBRqRGD9c8qWLvU/view?usp=sharing>

We hope that you'll join us on February 20th, as we are excited to hear from Dr. Jill Marshall, Assistant Professor of Geology at Portland State University, on the Role of Trees in Progressive Rock Failure. Her talk promises to increase your depth of knowledge on rock/tree mechanics. I can personally attest to the role trees play in dislodging rocks from steep slopes during a wind storm, and look forward to learning more about the process.

In March we will host the Jahns Distinguished Lecturer, Cynthia Palomares, who will give two talks: 1) Diversity, Equity and Inclusion in the Geosciences: What Can We Do?, and 2) How Climate Change Impacts Infrastructure. Between now and then, I hope your February is off to a great start!

Ryan Cole
AEG Oregon Chapter Chair 2023-2024



*Geologists are never at
a loss for paperweights.*

Bill Bryson



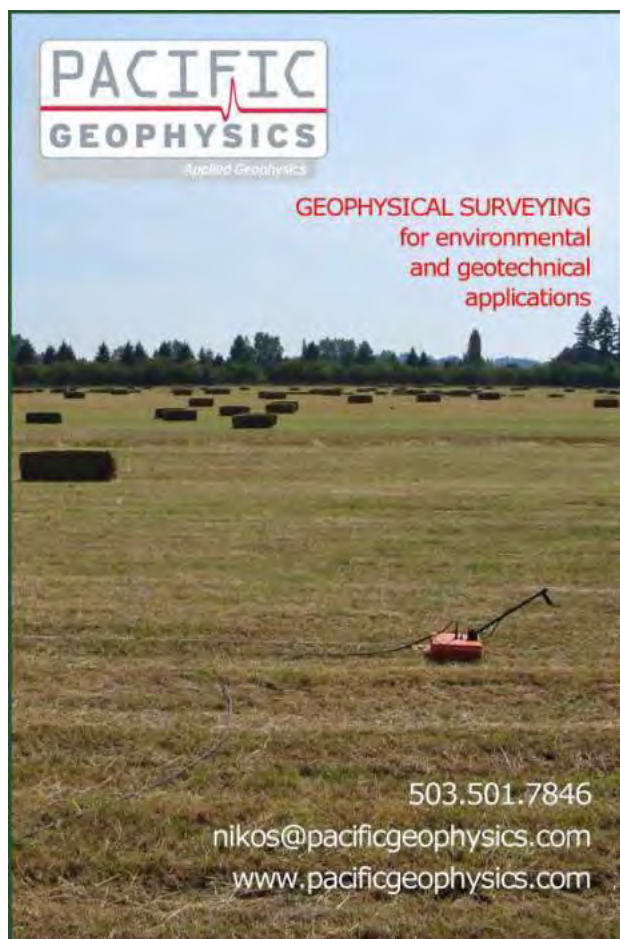
TECCO® GREEN Slope Stabilization

Geobrugg North America, LLC
22 Centro Algodones
Algodones, NM 87001 USA



www.geobrugg.com/tecco

BRUGG
Geobrugg



**PACIFIC
GEOPHYSICS**
Applied Geophysics

GEOPHYSICAL SURVEYING
for environmental
and geotechnical
applications

503.501.7846
nikos@pacificgeophysics.com
www.pacificgeophysics.com

*Geologists are never at
a loss for paperweights.*

Bill Bryson





Great People, Great Results.

We engineer success stories.

Since 1982, PBS Engineering and Environmental Inc. has been a trusted source of practical, sustainable solutions to the region's environmental and engineering challenges—enabling projects to succeed and communities to thrive.

PBSUSA.COM



ENVIRONMENTAL SERVICES • GEOTECHNICAL ENGINEERING • HEALTH & SAFETY • STRUCTURAL ENGINEERING • CIVIL ENGINEERING • SURVEY



EARTH DYNAMICS LLC

2284 NW Thurman St.
Portland, OR 97210
(503) 227-7659
info@earthdyn.com

www.earthdyn.com

Engineering Geophysics:

- Seismic Refraction/Reflection
- Shearwave Velocity Studies
- Electrical Resistivity Profiling
- Ground Penetrating Radar
- Magnetics/Electromagnetics
- Gravity
- Marine Geophysics

Vibration & Noise Analysis:

- Remote Vibration Monitoring
- Real-time Frequency Analysis
- Construction Monitoring
- Demolition Monitoring
- Blast Design and Monitoring
- Pre-construction Surveys
- Sensitive Equipment Certification

Rock Mechanics:

- Uniaxial Compressive Strength
- Direct and Triaxial Shear Strength
- Direct and Indirect Tensile Strength
- Dynamic & Static Elastic Moduli
- Thermal Properties
- Density & Porosity
- Moisture Content





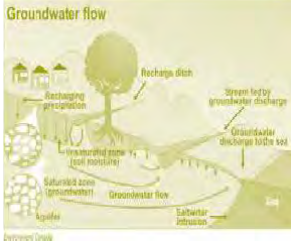
Your Environmental, Geotechnical, Clean Water Drilling Professionals

Work with experienced drillers who run your project with a friendly can-do attitude using state of the art drilling equipment, backed by an experienced management team with the authority to solve problems quickly.



Call: (253) 693-3760

Our Drilling Professionals are Ready to Help



*We learn geology the
morning after the
earthquake.*

Ralph Waldo Emerson

Rock Supremacy



Slope Stabilization

We are a one-stop-shop for your next retaining wall project from a basic cantilevered concrete, battered micropile foundation or a heavy duty anchored soldier pile wall.



Rockfall Mitigation

We are highly skilled in stabilizing rock slopes using pinned Tecco® systems, cable/ring netting, and double twist wire mesh. We also perform rock scaling, rock bolting/doweling and many other rockfall mitigation measures.



Drilling

We have extensive experience in drilling multiple variations of rock bolts/rock dowels, cable anchors, micropiles, rock sockets, tie-backs or horizontal drains in all types of subsurface environments.



Tunnel Rehabilitation

We specialize in rehabilitating or providing new tunnel construction with steel set erection, road heading, tunnel notching, liner removal, and applying shotcrete.



Shotcrete

We use a proprietary formula to effectively seal canals, soil nail walls or rock/soil surfaces. Our mix design is extremely durable and can be colored to match existing native landscapes. We also perform sculpting & staining services.



Landslide Remediation

We have years of experience solving landslide problems with a wide range of solutions to reach the perfect solution.



541.383.ROCK (7625) | Info@RockSupremacy.com | RockSupremacy.com

85147 N Hwy 97, Bend, OR 97701

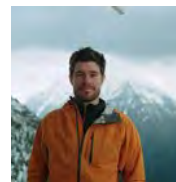
Chapter Officers & Committee Chairs



Chair:
Ryan Cole
US Forest Service
ryan.cole@usda.gov



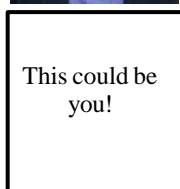
Program Chair:
Nathan Villeneuve
nvilleneuve@gri.com



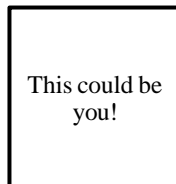
Legislature Chair:
Sebastian Durringer
Cornforth Consultants
SDurringer@CornforthConsultants.com



Chair-Elect:
Nikos Tzetos
Pacific Geophysics
nikos@pacificgeophysics.com



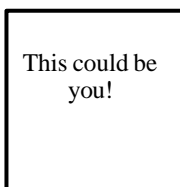
Field-Trip Chair:
Volunteer Needed
Please Help



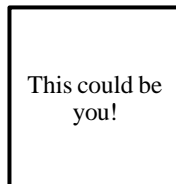
Newsletter Editor:
Volunteer Needed
This could be you!



Treasurer:
Nicholas Farny
FHWA Western Federal Lands
nicholas.farny@dot.gov



Membership Chair:
Volunteer Needed
Please Help



Webpage Editor:
Volunteer Needed
This could be you!



Secretary:
Justin McCarley
Cornforth Consultants
Justin.McCarley@cclit.com

**The Oregon Chapter is also on
the web at**

<http://www.aegoregon.org>

National AEG webpage:

<http://aegweb.org>



PSU Student Chapter President:
Marge Belcastro
Portland State University

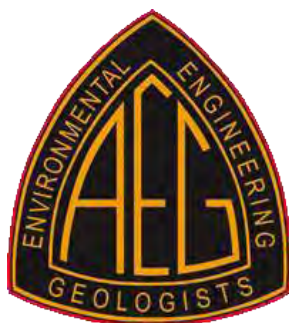


Past-Chair:
Aine Mines
Cornforth Consultants
Aine.Mines@cclit.com

Subscribe to the newsletter by sending any e-mail to
aegoregon-subscribe@groups.electricmembers.net

Thanks For Supporting AEG

Members, Volunteers, Aspect Consulting, Cornforth Consultants Inc., DOGAMI, Earth Dynamics LLC., Federal Highways (FHWA), Geobrug, GRI, Hi-Tech Rockfall, Holt Drilling, NACSE, ODOT, Oregon State University, Pacific Geophysics, PBS Engineering & Environmental, PLI Systems, Portland State University, Western Oregon University



The AEG Oregon Chapter Newsletter

The Association of Engineering Geologists (AEG) contributes to its members' professional success and the public welfare by providing leadership, advocacy, and applied research in environmental and engineering geology. AEG's values are based on the belief that its members have a responsibility to assume stewardship over their fields of expertise. AEG is the acknowledged international leader in environmental and engineering geology, and is greatly respected for its stewardship of the profession.

AEG OREGON CHAPTER NEWSLETTER is published monthly from September through May. Subscriptions are for members of AEG affiliated with the Oregon Chapter or other Chapters, and other interested people who have requested and paid a local subscription fee of \$10.00. E-mail subscriptions are free. News items are invited and should be sent to: Aine Mines, AEG Oregon Chapter Chair-Elect, Cornforth Consultants, Inc., 10250 SW Greenburg Road, Suite 111, Portland, OR 97223, e-mail: amines@cclit.com, phone (503) 452-1100. Electronic media is preferred. Deadline for submittal is the 25th of the month. Advertising: business card size \$100/yr; ¼ page \$200/yr; ½ page \$350/yr; 1 page \$450/yr.