Documenting spatial and temporal patterns of past landsliding is a challenging step in quantifying a region’s landslide hazard as well as the effect of landslides on landscape evolution. While routine landslide inventories can map spatial distributions, lack of dateable material, landslide reactivations, or time, access, and cost constraints generally limit dating large numbers of landslides to analyze temporal patterns. Here, we quantify the record of the Holocene history of deep-seated landsliding along a 25 km stretch of the North Fork Stillaguamish River valley, Washington State, USA, including the 2014 Oso landslide, which killed 43 people. We estimate the ages of more than 200 deep-seated landslides in glacial sediment by defining an empirical relationship between landslide deposit age from radiocarbon dating and landslide deposit surface roughness. We show that roughness systematically decreases with age as a function of topographic wavelength, consistent with models of disturbance-driven soil transport. The age-roughness model predicts a peak in landslide frequency ~ 1,000 cal. ybp, with very few landslide deposits older than 6,000 ybp or younger than 100 ybp, likely reflecting a combination of preservation bias and a complex history of changing climate, base level, and seismic shaking in the study area. All recent landslides have occurred where channels actively interact with the toes of hillslopes composed of glacial sediments, suggesting that lateral channel migration is a primary control on the location of past and future landslides in the valley.
Bio: Dr. Adam Booth

Adam Booth is an assistant professor of geology at Portland State University. His research involves using numerical models, remote sensing data, and fieldwork to decipher the role deep-seated landslides play in landscape evolution. Recently he has developed an inverse method for estimating landslide slip surface geometry from repeat high-resolution topographic data, and created a new landscape evolution model for deep-seated landslide-prone terrain. His favorite place to work on landslides is the north island of New Zealand. Prior to joining the faculty at Portland State Dr. Booth received a BA in physics from Grinnell College, was a high school math teacher, received a PhD in Geology from the University of Oregon, and did a postdoc at Caltech.

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“Keen observation is at least as necessary as penetrating analysis”

Karl Terzaghi
Message from the Chair

I hope everyone had an enjoyable summer and the opportunity to spend time with family and friends. Let me begin by thanking our outgoing Oregon Section Chair Adam Reese (Apex Companies, LLC) for his diligent work over the past year keeping the Section running smoothly as AEG Oregon navigated through the restructuring process from a Section-based to Regional-based model. He was assisted in this transition by our Past-Chair Linda Mark (ESA Vigil-Agrimis) who continues to dedicate long hours to the organization both at the local and national levels. I also want to congratulate Linda in her new role as the Regional Director for Region 3. In this position she will be representing the Oregon, Puget Sound, and Alaska Chapters at the National level. I believe that we are in good hands and the Oregon Board looks forward to working closely with Linda and the other Region 3 Chapters.

I would also like to express my thanks to other exceptional Chapter volunteers including: Mike Marshall (GRI), Program Chair; Scott Braunsten (PBS), Newsletter Editor; Keith Olsen (PRISM Climate Group), Website Editor; Erin Dunbar (GeoSyntec), Field Trip Chair; and Ruth Wilmoth (Columbia Geotechnical), Membership Chair. These volunteers continue year after year to contribute their time and without them we wouldn’t be a successful Chapter. Thanks again for all that you do!!

The election results have been tallied and the Oregon Chapter Board is pleased to welcome incoming Secretary Benjamin George. Ben is an Associate Engineer at Cornforth Consultants and is also a licensed Certified Engineering Geologist. He brings over 12 years of engineering geology and geotechnical engineering experience with an emphasis on rock slope stability and rockfall hazards. Mark Swank (Aspect Consulting) will now step into the role of Chair-Elect and Chris Humphrey (Federal Energy Regulatory Commission) will become Treasurer. I am privileged to serve as your Oregon Chapter Chair this year.

The AEG 59th Annual meeting will be held September 18-24 in Kona, Hawaii. I hope that some of you will have the opportunity to travel to this “geologist paradise” along with our two 2016 Student Award winners Max Bordal and Angela Piller. Unfortunately, I will not be able to attend but the Oregon Chapter Board will be well represented by Ben George, and Linda Mark will represent Region 3 at the National Board of Directors Meeting held after the conference. I have reviewed the list of meeting presenters and see that the Oregon Chapter has a strong presence at both the student and professional levels. Thanks for taking time out of your busy schedules to prepare presentations and represent the Chapter.

Don’t forget to mark your calendars for the first Chapter meeting of the year, which will be held September 27th at the Old Market Pub. Dr. Adam Booth from Portland State University will be presenting his work deciphering the timing of landslides in the North Fork Sillaguanish drainage in Washington State (location of the Oso Landslide). He will present an overview of his fieldwork and landslide dating, numerical modeling, and lidar analysis. I hope to see everyone there.

Looking forward to another successful year,

Stephen Hay, CEG
AEG Oregon Chapter Chair
"The earth is large and old enough to teach us modesty."

Hans Cloos
“Keen observation is at least as necessary as penetrating analysis”

Karl Terzaghi
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### 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.

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