

Catalina Segura

Assistant Professor

Department of Forestry Engineering Resources and Management

<http://people.forestry.oregonstate.edu/catalina-segura/>

Education

2008, PhD. Geography. University of Colorado

2003, MS. Environmental Engineering. University of Washington

1997, BS. Forestry Engineering. Universidad Distrital Francisco José de Caldas. Bogota, Colombia.

Academic Experience

Since 2013 - Assistant Professor Forest Hydrology, Department of Forest Engineering, Resources, and Management, Oregon State University.

2012-2013: Post-Doctoral Fellow Department of Marine Earth, and Atmospheric Sciences, North Carolina State University.

2008-2010: Post-Doctoral Fellow Department of Forestry and Natural Resources, North Carolina State University.

Non-Academic Experience

2011-2012 Universidad Autónoma de Colombia, Engineering Graduate Studies Director.

1997-2001. Forestry Engineer, AMBIOTEC LTDA Bogotá, Colombia,

Membership in Professional Organizations

Member, American Geophysical Union

Honors and Awards

- National Science Foundation Pan-American Advanced Study Institute (PASI). Sponsorship to participate in the workshop: Balancing Hydropower Development and Biodiversity: Is Sustainability in an Adaptive Management Framework Achievable? 2005 (\$5000)
- Fulbright Scholarship, 2001-2003 (\$65,000)

Publications

13. Mosquera*, G, Segura, C, Vache, K, Windhorst, D, Breuer, L; Crespo, P. Insights on the water mean transit time in a high-elevation tropical ecosystem, submitted to Hydrology and Earth System Sciences (HESS).
12. Segura, C., and J. Pitlick (2015), Coupling fluvial-hydraulic models to predict gravel transport in spatially variable flows, *Journal of Geophysical Research: Earth Surface*, doi:10.1002/2014JF003302.
11. Segura, C., P. Caldwell, G. Sun, S. McNulty, and Y. Zhang (2015), A model to predict stream water temperature across the conterminous USA, *Hydrological Processes*, 29(9), 2178-2195, doi:10.1002/hyp.10357.
10. Caldwell, P., C. Segura, S. G. Laird, G. Sun, S. G. McNulty, M. Sandercock, J. Boggs, and J. M. Vose (2015), Short-term stream water temperature observations permit rapid assessment of potential climate change impacts, *Hydrological Processes*, 29(9), 2196-2211, doi:10.1002/hyp.10358.
9. Segura, C., G. Sun, S. McNulty, and Y. Zhang (2014), Potential impacts of climate change on soil erosion vulnerability across the conterminous United States, *Journal of Soil and Water Conservation*, 69(2), 171-181, doi:10.2489/jswc.69.2.171.

8. Sun, G. and C. Segura. 2013. Interactions of Forests, Climate, Water Resources, and Humans in a Changing Environment: Research Needs. Volume 3, Issue 2 (April-June) - Special Issue. (Editorial)
7. Segura, C., D. Lazzati, and A. Sankarasubramanian (2013), The use of broken power-laws to describe the distributions of daily flow above the mean annual flow across the conterminous US, *Journal of Hydrology*, 505, 35-46, doi:10.1016/j.jhydrol.2013.09.016.
6. Segura, C., A. L. James, D. Lazzati, and N. T. Roulet (2012), Scaling relationships for event water contributions and transit times in small-forested catchments in Eastern Quebec, *Water Resources Research*, 48, W07502-W07502, doi:10.1029/2012WR011890.
5. Pitlick, J., E. R. Mueller, and C. Segura (2012), Differences in sediment supply to braided and single-thread river channels: What do the data tell us?, in *Gravel Bed Rivers: Processes, Tools, Environments*, edited by M. A. Church, P. Brion and A. H. Roy, pp. 502-511, Wiley and Sons, Chichester.
4. Segura, C., J. H. McCutchan, W. M. Lewis, Jr., and J. Pitlick (2011), The influence of channel bed disturbance on algal biomass in a Colorado mountain stream, *Ecohydrology*, 4(3), 411-421, doi:10.1002/eco.142.
3. Segura, C., and D. B. Booth (2010), Effects of Geomorphic Setting and Urbanization on Wood, Pools, Sediment Storage, and Bank Erosion in Puget Sound Streams, *Journal of the American Water Resources Association*, 46(5), 972-986, doi:10.1111/j.1752-1688.2010.00470.x.
2. Segura, C., and J. Pitlick (2010), Scaling frequency of channel-forming flows in snowmelt-dominated streams, *Water Resources Research*, 46, W06524-W06524, doi:10.1029/2009WR008336.
1. Pitlick, J., E. R. Mueller, C. Segura, R. Cress, and M. Torizzo (2008), Relation between flow, surface-layer armoring and sediment transport in gravel-bed rivers, *Earth Surface Processes and Landforms*, 33(8), 1192-1209, doi:10.1002/esp.1607.

Proceedings

- Pitlick, J, Segura, C and Mueller, E. Influence of Sediment Transport Intensity and Hydrology on the Bankfull Hydraulic Geometry of Gravel Bed Rivers. Proceedings from the 2010 AGU Western Pacific Geophysics Meeting. 22-25 Jun 2010.
- Segura, C, Rylko M, Booth D, and Nelson, P. 2003. Comparing and evaluating rapid assessment techniques of stream-channel conditions for assessing the quality of aquatic habitat at the watershed scale. Proceedings Georgia Basin/Puget Sound Research Conference, Vancouver, BC, Mar. 31-Apr. 3 2003.

International Conference presentations (*Denotes student under Segura's advisement)

1. Segura C, Caldwell P, Cohen E, Sun G McNulty S Modeling the impacts of climate change on stream water temperature across scales (invited), GC51E-1126, American Geophysical Union (AGU), Fall Meeting, San Francisco, CA, Dec 2015.
2. Nickolas L (*), Segura C, Brooks R, Temporal and Spatial Variation of Surface Water Stable Isotopes in the Marys River Basin, Oregon H43I-1647, AGU, Fall Meeting, San Francisco, CA, Dec 2015
3. Bair R (*), Segura C, Lorion, C, Modeling the Effect of Geomorphic Change Triggered by Large Wood Addition on Salmon Habitat in a Forested Coastal Watershed, EP43B-0972 American Geophysical Union, Fall Meeting, San Francisco, CA, Dec 2015
4. Katz S (*), Segura C, Warren, D, Sediment transport dynamics and its relation to primary production in mountain headwater streams, EP31D-08, American Geophysical Union, Fall Meeting, San Francisco, CA, Dec 2015 AGU Fall Meeting, San Francisco, CA, Dec 2015
5. Segura C, Lydia Nickolas(*), Leshchinsky, Scaling properties of rainfall-runoff generation processes and nutrient flushing mechanisms in the Oregon Cascade Mountain, B H41M-06, American Geophysical Union, Fall Meeting, San Francisco, CA, Dec 2015

6. Bladon K, Cook N (*), Light J, Segura C, Teply M, Spatial and Temporal Stream Temperature Response to Contemporary Forest Harvesting in the Oregon Coast Range H23H-1669, American Geophysical Union, Fall Meeting, San Francisco, CA, Dec 2015
7. Segura C, Lydia Nickolas(*), Kevin Bladon, Investigation of the scaling properties of the rainfall runoff generation processes and its relation to nutrient flushing mechanisms in the Oregon Cascade Mountains: A nested approach, 4th International Conference on Forests and Water in a Changing Environment, Kelowna, BC, Canada July, 2015.
8. Segura C and Pitlick J, A model to predict annual bed load transport in ungauged watersheds, American Geophysical Union, Fall Meeting, San Francisco, CA, Dec 2015.
9. Segura C., Caldwell P; Sun G. Cohen E; McNulty S. 2013 (Invited), Modeling Impacts of Environmental Change on Ecosystem Services. Presented at the Workshop "Reducing vulnerability from climate change, and conserving biodiversity through reforestation and restoration, and urban forestry". Crowne Plaza, EL SALVADOR, 23 and 24 JULY 2013.
10. Segura, C., Sun, G., McNulty, S., and Y. Zhang 2013. Climate change impacts on soil erosion vulnerability across the conterminous US. American Water Resources Association Summer Specialty Meeting 'Healthy Forests=Healthy Waters'. June 27-28, 2013, Hartford, CT.
11. Segura C and Lazzati D., Modeling the daily-flow distribution of unregulated basins in the continental US, AGU, Fall Meeting, San Francisco, CA, Dec 5-9/2011.
12. Pitlick J., Segura C, and Mueller E (invited). Influence of Sediment Transport Intensity and Hydrology on the Bankfull Hydraulic Geometry of Gravel Bed Rivers. 2010 Western Pacific Geophysics Meeting, Taipei, Taiwan, 22–25 June 2010.
13. Segura C and Pitlick J. Methodology for the prediction of flows of geomorphic and ecological importance in mountain rivers (invited). First International conference of ecological flow and climate change. Bogotá, Colombia, June 10 -11 2010.
14. Segura C and James A. Investigating variability in small multi-scale catchment response using lumped conceptual modeling of storm-based runoff and stable isotope data. AGU, Fall Meeting, San Francisco, CA, Dec 14-18/2009.
15. Segura C and James, A. Combining hydrometric, stable isotope and hydrochemical analysis in the development of a multi-scale catchment model of a forested headwater system. 2nd International Conference on Forests and Water in a Changing Environment, Raleigh, NC. Sep 14–16, 2009.
16. James A, Segura C, McDonnell J, McGuire K. Can Stream Hydrographs be used to Estimate How Long Water Resides in the Catchment? AGU/CGU Joint Assembly, Toronto, May 2009.
17. James, A, Segura C, McDonnell J, McGuire. Using hydrograph recession as a proxy for Residence Time estimation across scale. State of the art of catchment-scale residence time: conceptualization, modeling and analysis, Vienna, Austria. 19-21 January 2009.
18. Segura C and Pitlick J. Relation between shear stress, surface-layer armoring, and sediment transport in a mountain stream. AGU, Fall Meeting, San Francisco, CA, Dec 9-12/2006.
19. Segura C, Pitlick J, McCutchan JH, and Lewis WM. 2005. Effects of channel bed disturbance on algal biomass in a mountain stream, AGU, Fall Meeting, San Francisco, CA, Dec 9-12/2005.
20. Pitlick J, Mueller E, Segura C, Torizzo M and Cress R. Adjustments of Bed Sediment Texture to Variations in Shear Stress in High Gradient Streams. American Geophysical Union, Fall Meeting, San Francisco, CA, Dec 9-12/2004.
21. Segura C and Booth DB. Morphological Effects of Channel Confinement and Riparian Vegetation on Urban and Non-urban Streams of the Pacific Northwest. AGU, Fall Meeting, San Francisco, CA, Dec 9-12/2003.
22. Segura C, Rylko M, Booth D, and Nelson P. Comparing and evaluating rapid assessment techniques of stream-channel conditions for assessing the quality of aquatic habitat at the watershed scale. Georgia Basin/Puget Sound Research Conference, Vancouver, BC, Mar. 31-Apr. 3 2003.

National Meetings (*Denotes student under Segura's advisement)

1. Segura C, Lydia Nickolas(*), Scaling properties of rainfall-runoff generation processes and nutrient flushing mechanisms in the Oregon Cascade Mountains. Part 1: Hydrologic modelling incorporating electrical conductivity and water stable isotopes, All LTER Scientist Meeting, Estes Park Colorado, August 30 – Sep 2 , 2015.
2. Segura C, Lydia Nickolas(*), Scaling properties of rainfall-runoff generation processes and nutrient flushing in the Oregon Cascade Mountains. Part 2: Relation between rainfall runoff and nutrient flushing in the Oregon Cascade Mountains, All LTER Scientist Meeting, Estes Park Colorado, August 30 – Sep 2 , 2015.
3. Booth D, Alberti M, Avolio C, and Segura C (Invited), Determinants of urban stream degradation. Channel Protection and Restoration Conference. The Ohio State University, October 7, 2003, p. 9-14.

Invited seminars

1. Modeling climate change impacts on water quality at the continental scale, Oregon State University, BEE 507. SEMINAR. CRN: 21344, seminar Dec 1, 2015 (invited seminar), 35 participants.
2. The use of multidimensional flow modeling to estimate sediment transport dynamics in contrasting lithology and implications to stream ecology, CEOAS - G&G Seminar, Oct 22, 2015, 40 participants.
3. School of the Environment, Winter Seminar, Portland State University, 2015, "Scaling properties of fluvial and hydrologic phenomena.
4. Geography Winter Seminar, Oregon State University, 2014 "Spatial variability in sediment transport and its influence on benthic Chl a.
5. Department of Forestry Engineering and Management. Oregon State University, 2013 "Understanding river systems through multi-scale eco-hydrologic modeling."
6. Department of Marine, Earth, and Atmospheric Sciences. North Carolina State University, 2012. "Influence of sediment transport on fresh water ecosystems"
7. Department of Forestry and Environmental Resources Seminar, North Carolina State University, 2008. "Spatial variations in sediment transport intensity and its effects on benthic organisms, CO".
8. Department of Civil and Environmental Engineering, North Carolina State University, 2009. "Scaling Frequency of Channel-Forming Flows in Snowmelt high gradient streams."

Professional activities

Reviewer for Water Resources Research, Hydrological processes, Journal of Geophysical Research, Journal of the American Water Resources Association, Journal of Hydrology, EOS, Guest Editor for the Third Special Issue of the British Journal of Environment and Climate Change