

Claire C. Masteller

Earth and Planetary Sciences
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<https://sites.wustl.edu/wustl-geomorphology/>

PROFESSIONAL EXPERIENCE

Assistant Professor, Washington University in St. Louis	2020 –
Alexander von Humboldt Postdoctoral Research Fellow, GFZ – German Research Center for Geosciences, Potsdam, Germany	2019 – 2020
Postdoctoral Research Fellow, GFZ – German Research Center for Geosciences, Potsdam, Germany	2017 – 2020
Research/Teaching Assistant, University of California, Santa Cruz	2012 – 2017
NSF Graduate Research Fellow, University of California, Santa Cruz	2013 – 2016

EDUCATION

PhD, Earth and Planetary Sciences, <i>University of California, Santa Cruz</i> <i>Biological and physical modifications of the onset of sediment motion</i> Advisor: N.J. Finnegan Committee: E.E. Brodsky, D.M. Rubin, L.S. Sklar	2017
BA, Earth Science – geology, <i>University of Pennsylvania</i> <i>Interplay of vegetation cover, groundwater, and dune morphology at White Sands National Monument, New Mexico</i> Advisor: D.J. Jerolmack	2012

PUBLICATIONS

ORCID: <http://orcid.org/0000-0002-6830-7223>

Google Scholar: <https://scholar.google.com/citations?user=b5xeNpgAAAAJ&hl=en>

4. **Masteller, C.C.**, Finnegan, N.J., Turowski, J.M., Yager, E.M., Rickenmann, D., (2019) History-dependent variation to the onset of motion revealed by continuous bedload transport measurements in a steep mountain stream: *Geophysical Research Letters*. doi:10.1029/2018GL081325
3. **Masteller, C.C.**, Finnegan, N.J., (2017), Interplay of grain protrusion and bedload transport rates in an experimental flume: *Journal of Geophysical Research: Earth Surface*. doi:10.1002/2016JF003943
2. **Masteller, C.C.**, Finnegan, N.J., Warrick, J., Miller, I., (2015), Kelp, Cobbles, and Currents: Biologic reduction of coarse grain entrainment: *Geology*. doi:10.1130/G36616.1
1. Jerolmack, D.J., Ewing, R.C., Falcini, F., Martin, R.L., **Masteller, C.**, Phillips, C., Reitz, M., Buynevich, I., (2012), Internal boundary layer model for the evolution of desert dune fields: *Nature – Geoscience*. doi:10.1038/ngeo1381

non-refereed

1. Masteller, C.C., Turowski, J.M., Rock erodibility controls on bedrock erosion across landscapes (National Cooperative for the Disposal of Radioactive Waste internal report)

in preparation

- Masteller, C.C. and Johnson, J.P., A discharge-dependent state-function of the threshold for motion, (*draft in progress*)
- Masteller, C.C. et al., Characteristic mechanical response of sea cliffs to repetitive wave action, (*draft in progress*)
- Masteller, C.C. and Turowski, J.M., Rock erodibility controls on fluvial bedrock erosion (full draft, in revision w/ co-authors)
- Turowski, J.M., Schwanghart, W., Huppert, K.L., Masteller, C.C., Uncertainties in Chi analysis: implications for drainage network and divide stability, (*in preparation for Earth Surf. Dyn.*)

FELLOWSHIPS

- | | |
|------------|---|
| 2019 | Alexander von Humboldt Postdoctoral Fellowship |
| 2017 | National Science Foundation EAR Postdoctoral Fellowship (<i>declined</i>) |
| 2016 | ARCS Foundation Fellowship (\$10,000), UCSC |
| 2013 | National Science Foundation Graduate Research Fellowship |
| 2011, 2010 | Greg and Susan Walker Endowment for Research in Earth and Environmental Science (\$4,200 total, 3 awards), Penn |

AWARDS & HONORS

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|-------------|---|
| 2017 | Honorable Mention, Departmental Outstanding Teaching Assistant Award, UCSC |
| 2016 | Chancellor's Achievement Award for Diversity (w/ GEODES founders), UCSC |
| 2015 | Dean's Nomination, AAAS Science Program for Excellence in Science |
| 2015 | Alumni Assoc. Award for Best Pres. (Phys. Sci.), Grad. Research Symposium, UCSC |
| 2015 | Departmental Award for Best Pres., Grad. Research Symposium, UCSC |
| 2015 | Advanced to candidacy with honors, UCSC |
| 2012 | Outstanding Teaching Assistant Award, Penn |
| 2012 | Cum laude with distinction in Earth Sciences, Penn |
| 2010 | Dean's List, University of Queensland |
| 2008 – 2012 | Spiegel Family & Matrice-Ellis Kirk Academic Scholarships, Penn |

FUNDING

- | | |
|-----------|---|
| 2020-2022 | NSF , "EAGER: Collaborative Research: Invisible Floods on the Mississippi River Floodplain – Unravelling the Causes of Urban Flooding in a Community-Centered Approach to Geomorphology"
Co-PI with J. Constantine , Williams College
(\$299,997 total, \$164,897 to Washington University) |
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TEACHING EXPERIENCE

<i>Instructor, EAPS428: Hydrology, WUSTL</i>	<i>Spring 2021</i>
<i>Instructor, EAPS409: Surface Processes, WUSTL</i>	<i>Fall 2020</i>
<i>Instructor, EART1: Oceanography, UCSC</i>	<i>Summer 2017</i>
<i>Teaching Assistant, EART110C: Geophysics, UCSC</i>	<i>Spring 2017</i>
<i>Teaching Assistant, EART140: Geomorphology, UCSC</i>	<i>Winter 2013, 2017</i>
<i>Teaching Assistant, EART104: Geologic Hazards, UCSC</i>	<i>Fall 2016</i>
<i>Course Development, GEOL130: Oceanography, Penn</i>	<i>Summer 2011</i>
<i>Teaching Assistant, GEOL130: Oceanography, Penn</i>	<i>Fall 2011, Spring 2012</i>

INVITED TALKS

2020 Southern Illinois University – Carbondale
2019 Ruhr-Universität Bochum
2018 Washington University in St. Louis
2017 GFZ – German Research Center for Geosciences
2016 USGS Pacific Coastal and Marine Science Center
2015 California Institute of Technology Geomorphology Seminar

PROFESSIONAL & PUBLIC SERVICE

Ongoing *Ad-hoc reviewer: National Science Foundation Geomorphology and Land Use Dynamics (3 proposals, 1 panel), Geophysical Research Letters, Earth Surface Processes and Landforms, Earth Surface Dynamics, Journal of Hydraulic Engineering, Water Resources Research, Geology, Murdock Trust*

Associate Editor, Earth Surface Dynamics (beginning 2019)
AGU EPSP fall meeting programming committee (beginning 2019)
AGU EPSP section social media coordinator (beginning 2018)
AGU EPSP section executive committee member (beginning 2018)

Meetings *Session co-convener*
American Geophysical Union Fall Meeting
2018, 2019, 2020 EPSP General Contributions poster session
2018, 2019, 2020 The role and relevance of thresholds and variability across landscapes
2017 Fluvial morphodynamics, channel patterns, and beyond
European Geosciences Union General Assembly
2018, 2019 Sediment transport and channel morphology in mountain rivers
Student presentation judge, AGU and EGU (2 years, 24 presentations)

2018 – 2019 *Co-organizer, GFZ Earth Surface Dynamics Seminar series*
2018 – 2019 *Co-organizer, Section 4.6 internal seminars*

- 2019 *Ad-hoc committee to propose new AGU EPSP award (with N. Gasparini, B. Yanites, J. Willenbring, E. Yager, and R. Mahon)*
- 2017, 2016 *Mentor, Student Internship Program, UCSC*
- 2017, 2016 *Co-Founder & Organizer, EPS Department Research Symposium, UCSC*
- 2016 *Selected lightning talk, Expanding Potential 2016 Workshop, UC Berkeley*
- 2016 *Poster presentation, Expanding Potential 2016 Workshop, UC Berkeley*
- 2015 – 2017 *Co-Founder, GEODES: Women & Minorities in Geoscience group, UCSC*
- 2015 – 2016 *Graduate Representative, Faculty Search Committee for Open Position in Planetary Science, UCSC*
- 2015 *Speaker, Tea Talk Tuesday Seminar Series, UCSC*
- 2013 – 2016 *Graduate Student Representative to EPS faculty, UCSC*
- 2013 *Organizer, Whole Earth Seminar Series, Spring Quarter, UCSC*
- 2010 – 2012 *Research Peer Advisor, Center for Undergrad. Res. and Fellowships, Penn*

SELECTED WORKSHOPS

- 2019 *Climatic controls on continental erosion and sediment transport, GSA Penrose conference, Juneau, Alaska*
- 2019 *Ruhr-Universität Bochum Near-surface geophysics short course, Carboneras, Spain*
- 2018 *Alptal 50th Anniversary Workshop, Einsiedeln, Switzerland*
- 2018 *Google Earth Engine Workshop, Berlin, Germany*
- 2016 *National Center for Earth-surface Dynamics Summer Institute, Minneapolis, MN*
- 2015 *Sorting Workshop, Delft, Netherlands*
- 2013 *Bedload Monitoring Workshop, Birmensdorf, Switzerland*

STUDENT MENTORSHIP

Graduate

- 2020 – *Jedidiah Dale, PhD*

Undergraduate and high school

- 2018 *Christopher Pagel (undergraduate), patterns and processes on rocky coasts, GFZ*
- 2017 *Drew Wadsworth & Desiree Ho (high school), gravel bar roughness as a proxy for flood intermittency in a natural channel, UCSC*
- 2016 *Megan Gürer & Sarah Sullivan (high school), sediment grain reorientation in response to varying flow magnitude in an experimental flume, UCSC*
- 2015 *Ellen Mills & Sergio Martinez (undergraduate), role of low flow duration on bedload transport in an experimental flume, UCSC*

CONFERENCE ABSTRACTS (* denotes student author)

- 24. **Masteller, C.C.**, Hovius, N., Thompson, C., Vann Jones, E.C., Woo, H., Adams, P., Dickson, M., Rosser, N.J., Young, A., *Exploring the interplay of wave climate, vertical land motion, and rocky coast evolution, EGU General Assembly, Vienna, Austria, 3-8 May 2020. ** Meeting cancelled due to COVID-19 pandemic ***

23. Turowski, J.M., Schwangert, W., Huppert, K.L., **Masteller, C.C.**, Uncertainties in Chi analysis: implications for drainage network and divide stability, EGU General Assembly, Vienna, Austria, 3-8 May 2020. *** Meeting cancelled due to COVID-19 pandemic ***
22. **Masteller, C.C.**, Hovius, N., Thompson, C., Vann Jones, E.C., Woo, H., Adams, P., Dickson, M., Rosser, N.J., Young, A., Characterizing sea cliff response to wave action and identifying potential rock damage conditions using seismic methods, AGU Fall Meeting, San Francisco, CA, 9-13 December 2019.
21. Johnson, J.P., Gasparini, N.M., **Masteller, C.C.**, Saletti, M., Hassan, M., Anderson, S., How sediment connectivity influences gravel transportability and bedrock erodibility, AGU Fall Meeting, San Francisco, CA, 9-13 December 2019.
20. **Masteller, C.C.**, Hovius, N., Thompson, C., Woo, H., Adams, P., Dickson, M., Young, A., Rosser, N.J., Brain, M.J., Vann Jones, E.C., Towards understanding the effects of variable wave forcing on sea cliff erosion and stability using seismic methods, Rivers, Coastal and Estuarine Morphodynamics Symposium, Auckland, New Zealand, 16-21 November 2019. Oral.
19. **Masteller, C.C.**, Finnegan, N.J., Johnson, J.P., Yager, E., Turowski, J.M., Rickenmann, D., The causes and consequences of a time-varying threshold for motion for fluvial bedload transport, GSA Penrose conference, Juneau, Alaska, 4-10 August 2019. Poster.
18. **Masteller, C.C.**, Dietze, M., Cook, K.L., Hovius, N., Towards understanding the effects of variable wave forcing on sea cliff erosion and stability using seismic methods, EGU General Assembly, Vienna, Austria, 7-12 April 2019. Oral.
17. **Masteller, C.C.**, Dietze, M., Cook, K.L., Hovius, N., **(Invited)**, Towards understanding the effects of variable wave forcing on sea cliff erosion and stability using seismic methods, AGU Fall Meeting, Washington, D.C. 10-14 December 2018. Oral.
16. **Masteller, C.C.**, Finnegan, N.J., Johnson, J.P., Yager, E., Turowski, J.M., Rickenmann, D., **(Invited)**, The causes and consequences of a time-varying threshold for motion for fluvial bedload transport. AGU Fall Meeting, Washington, D.C., 10-14 December 2018. Oral.
15. Barcheck, C.G., Beganskas, S., **Masteller, C.C.**, Pfeiffer, A.M., Roth, D.L., Taylor, S.E., Begeman, C., Killam, D., White, S.M., Maxwell, R., Gyalay, S., Kaufman, Z., Serrano, A., Schnorr, E., GEODES: A model for graduate-student led initiatives in diversity, equity, and inclusion, AGU Fall Meeting, Washington, D.C., 10-14 December 2018. Poster.
14. Johnson, J.P., Pretzlav, K., Olinde, L., **Masteller, C.C.**, Bradley, N., Turowski, J.M., Rickenmann, D., Measuring and modeling disequilibrium gravel transport and threshold evolution during natural floods, AGU Fall Meeting, Washington, D.C., 10-14 December 2018. Oral.
13. **Masteller, C.C.**, Finnegan, N.J., Turowski, J.M., Johnson, J.P., Rickenmann, D., Order and disorder in gravel bed rivers: History-dependent variation to the onset of motion revealed by continuous bedload transport measurements, EGU General Assembly, Vienna, Austria, 8-13 April 2018. Oral.
12. **Masteller, C.C.**, Turowski, J.M., Finnegan, N.J., Rickenmann, D., The formation and destruction of fluvial memory: Discharge-dependent variation to the onset of motion revealed by continuous bedload transport measurements in a steep mountain stream: Abstract EP32B-04, AGU Fall Meeting, New Orleans, LA 11-15 December 2017, Oral.

11. **Masteller, C.C.**, Finnegan, N.J., How rivers remember: The impacts of prior stress history on grain scale topography and bedload transport: Abstract EP23D-03, AGU Fall Meeting, San Francisco, CA, 12-16 December 2016, Oral.
10. Güreş, M.*, Sullivan, S.*, **Masteller, C.C.**, Bed structure and bedload transport: Sediment grain reorientation in response to high and low flows in an experimental flume: Abstract ED41A-0765, AGU Fall Meeting, San Francisco, CA, 12-16 December 2016, Poster.
9. **Masteller, C.C.**, Finnegan, N.J., Quantifying the impact of low flow periods on bed topography and bedload transport rates: Abstract EP21B-0895, AGU Fall Meeting, San Francisco, CA, 14-18 December 2015, Poster.
8. **Masteller, C.C.**, Finnegan, N.J., Warrick, J., Miller, I., Kelp, Cobbles, and Currents: Biologic reduction of coarse grain entrainment: Abstract EP44B-06, AGU Fall Meeting, San Francisco, CA, 9-13 December 2013, Oral.
7. **Masteller, C.C.**, Jerolmack, D.J., Bhattachan, A., Response of vegetation stability and groundwater depth to spatial variability in sediment transport; White Sands National Monument, New Mexico: Abstract EP31B-0813, AGU Fall Meeting, San Francisco, CA, 2-7 December 2012, Poster.
6. Jerolmack, D.J., Ewing, R.C., Falcini, F., Martin, R.L., **Masteller, C.C.**, Phillips, C.B., Reitz, M.D., Feedbacks between roughness and boundary-layer aerodynamics control desert dune field evolution: Abstract EP31E-01, AGU Fall Meeting, San Francisco, CA, 2-7 December 2012, Oral.
5. Ewing, R.C., Jerolmack, D.J., Martin, R.L., Reitz, M.D., Phillips, C.B., Falcini, F., **Masteller, C.C.**, Morphology and formation of the upwind margin at White Sands Dune Field: Abstract EP31E-03, AGU Fall Meeting, San Francisco, CA, 2-7 December 2012, Oral.
4. Bentley, A., Buynevich, I.L., Jerolmack, D.J., Ewing, R., **Masteller, C.**, Boles, A., Bustos, D., Kerber, L.E., McNutt, B., Characterizing subsurface complexity of aeolian landforms with georadar: Abstract 200414, GSA Northeastern Section Meeting, Hartford, CT, 18-20 March 2012, Poster.
3. **Masteller, C.**, Thieler, E.R., Horton, B.P., Quantifying the marine radiocarbon reservoir effect for U.S. mid-Atlantic coastal waters: Abstract GC43D-0974, AGU Fall Meeting, San Francisco, CA, 5-9 December 2011, Poster.
2. Piliouras, A., Falcini, F., **Masteller, C.**, Jerolmack, D.J., Effects of potential vorticity on sediment transport and deposition at river mouths: Abstract EP33A-0909, AGU Fall Meeting, San Francisco, CA, 5-9 December 2011, Poster.
1. Jerolmack, D.J., Ewing, R.C., Falcini, F., Martin, R.L., **Masteller, C.**, Phillips, C.B., Reitz, M.D., Roughness controls patterns of sediment transport, vegetation and groundwater in a desert dune field: Abstract NG31B-03, AGU Fall Meeting, San Francisco, CA, 5-9 December 2011, Oral.

FIELD EXPERIENCE

- 2018, 2019 Orkney Islands, UK, *passive and active seismic campaigns, UAV-based photogrammetry, groundwater well installation and maintenance*
- 2017 Nahal Eshtemoa, Israel, *active seismic campaign*
- 2017 Santa Cruz Mountains, *photogrammetry*
- 2013 Swiss Alps, *Seismometer deployment, photogrammetry*

2012 Luquillo CZO, *Surveying, Schmidt hammer & grain size measurements*
2011, 2012 White Sands Nat'l Monument, *Groundwater & soil sampling surveys*
2011 Coastal New Jersey, *Salt marsh surveying, sediment coring*
2010 Gold Coast, Australia, *Sediment coring, pollen & charcoal analysis*
2010 Savannah, Georgia, *Salt marsh surveying, sediment coring*
2010 White Sands Nat'l Monument, *Dune strata logs, sediment flux measurements*

LABORATORY EXPERIENCE

2016 *Flume experiments, St. Anthony Falls Laboratory, University of Minnesota*
2014 – 2016 *Flume experiments, Richmond Field Station, Univ. of California, Berkeley*
2010 – 2011 *Delta basin experiments, Sediment Dynamics Lab., Univ. of Pennsylvania*

PROFESSIONAL AFFILIATIONS

American Geophysical Union, European Geosciences Union, Earth Science Women's Network