

DR. KIERAN B.J. DUNNE | CURRICULUM VITAE | December 31, 2020

RESEARCH: geomorphology, sediment transport, morphodynamics.

PROFESSIONAL APPOINTMENTS:

- 08/2019-present: *Postdoctoral Fellow*, Rice University
Department of Earth, Environmental, and Planetary Sciences. Houston, TX.
- 06/2013-06/2015: *Geophysical Risk Analyst*, Aon
Aon Analytics: Research & Innovation. Singapore.

EDUCATION:

- 2015-2019: University of Pennsylvania, Doctor of Philosophy in Earth and Environmental Science (Philadelphia, PA).
 - Dissertation: *A Sticky Pursuit of the Threshold Channel: The effect of cohesion on alluvial river channel geometry*
 - Advisor: Dr. Douglas J. Jerolmack
- 2012-2013: Cornell University, Master of Engineering in Civil and Environmental Engineering. (Ithaca, NY)
- 2008-2012: Cornell University, Bachelor of Arts in Geophysics. (Ithaca, NY)

PUBLICATIONS:

2020 **Dunne, K.B.J.** and Jerolmack, D.J. "What sets river width?" *Science Advances*.
<https://doi.org/10.1126/sciadv.abc1505>

in review **Dunne, K.B.J.**, Arratia, P.E., Jerolmack, D.J. "A new method for in-situ measurement of the erosion threshold of river channels." *Earth Surface Processes and Landforms*.
Preprint available: <https://doi.org/10.31223/osf.io/rqcep>

submitted **Dunne, K.B.J.**, Dee, S.G, Reinders, J., Muñoz, S.E., and Nittrouer, J.A. "Enhanced probability of catastrophic Mississippi River floods under high emissions scenarios." *Nature Climate Change*.
Preprint available upon request

2018 **Dunne, K.B.J** and Jerolmack, D.J. "Evidence of, and a proposed explanation for, bimodal transport states in alluvial rivers." *Earth Surface Dynamics*.
<https://doi.org/10.5194/esurf-6-583-2018>

2016 Dunne, T., Malmon, D.V., **Dunne, K.B.J.** "Limits on the morphogenetic role of rain splash transport in hillslope evolution." *Journal of Geophysical Research: Earth Surface*.
<https://doi.org/10.1002/2015JF003737>

2016 Terry, T.P., **Dunne, K.B.J.**, Jankaew, K. "Prehistorical frequency of highenergy marine inundation events driven by typhoons in the Bay of Bangkok (Thailand), interpreted from coastal carbonate boulders." *Earth Surface Processes and Landforms*.
<https://doi.org/10.1002/esp.3873>

2015 Terry, T.P., Jankaew, K., **Dunne, K.B.J.** "Coastal vulnerability to typhoon inundation in the Bay of Bangkok, Thailand? Evidence from carbonate boulder deposits on Ko Larn island." *Estuarine, Coastal and Shelf Science*.
<https://doi.org/10.1016/j.ecss.2015.05.028>

AWARDS & HONORS

- Binghamton Geomorphology Symposium Travel Grant Awardee, 2018
- Summer Institute of Earth Surface Dynamics Attendee, University of Minnesota, 2018
- Grad Ben Talks Winner: Natural Sciences Division, University of Pennsylvania, 2018
- GAPSA Research Student Travel Grant Recipient, University of Pennsylvania, 2017
- Benjamin Franklin Fellowship, University of Pennsylvania, 2015-2017

SERVICE:

Leadership (Service to Scientific Community)

- Social Media Committee Member. AGU Earth and Planetary Surface Processes Executive Committee. 2018-Present.
- Session Chair/Convener. Flow, Transport, and Morphology: Linkages Between Erosion, Transport, Deposition, and Morphology Across Scales, AGU 2020.
- Student Committee President. AGU Earth and Planetary Surface Processes Executive Committee. 2017-2018.
- Student Committee Member. AGU Earth and Planetary Surface Processes Executive Committee. 2016-2017.

STEM Outreach

- Speaker, Open Labs Science Café 2018, University of Pennsylvania, Philadelphia, PA.
- Speaker, FIRST LEGO League 2018 Kickoff Event, University of Pennsylvania, Philadelphia, PA.
- Science Volunteer, Philadelphia Science Festival 2018, Pennovation Center, Philadelphia, PA.
- Speaker, Nerd Nite Philly Pub Talk Series 2017 "The Physical Mechanisms behind the Most Romantic Riverwalk", Philadelphia, PA.
- Science Volunteer, Philadelphia Science Festival 2017, Franklin Institute, Philadelphia, PA.
- Skype-a-Scientist (K-12, multiple time participant), 2017-Present.

Media

- Grad BEN Talks 2018: "Mud and the Shape of Rivers." <https://vimeo.com/258174497>

TEACHING & MENTORING:

Teaching:

- Graduate Teaching Assistant – Introduction to Geology (GEOL 100), Fall 2016, University of Pennsylvania
- Graduate Teaching Assistant – Earth and Life Through Time (GEOL 125), Spring 2016, University of Pennsylvania

Mentoring:

- Sarah Haber (University of Pennsylvania, Earth and Environmental Science), Masters Student Researcher, 2018-2019.
- Phillip Choi (University of Pennsylvania, Earth and Environmental Science), Undergraduate Research Assistant, 2019.
- Nina McKay (Bowdoin College, Earth Science), Undergraduate Research Assistant, 2018.
- Kristen Tilley (University of Pennsylvania, Systems Engineering), Undergraduate Research Assistant, 2018.
- Jiyeux Seok (University of Pennsylvania, Chemical Engineering), Undergraduate Research Assistant, 2017.
- Lisa Heintzelman (Aon, Singapore), Analytics Intern, 2014.
- Guna Sekharan (Aon, Singapore), Analytics Intern, 2014.
- Eubin Hahn (Aon, Singapore), Analytics Intern, 2013.

INVITED TALKS & SEMINARS:

- UT Austin Jackson School of Geosciences Soft Rock Seminar, September 30th, 2019. "What Sets the Width of a River Channel?"
- Philadelphia Geological Society, March 21st, 2019. "Mud and the Shape of Rivers."

CONFERENCE PRESENTATIONS:

- American Geophysical Union (AGU) Fall Meeting, Dec. 2020. Poster: Field Investigation of Cohesive Sediment Flocculation and Sedimentation Across the Fluvial to Marine Transition.
- American Geophysical Union (AGU) Fall Meeting, Dec. 2019, San Francisco, CA. Poster: Predicting Alluvial River Planform Morphology from Threshold Channel Theory.
- Wolman Club Meeting, May 2019, Lancaster, PA. Poster: Modelling Alluvial River Channel Morphology from Threshold Channel Theory.
- American Geophysical Union (AGU) Fall Meeting, Dec. 2018, Washington, D.C. Talk: Field Investigation of the Influence of Bank-Toe Critical Shear Stress on Suspension River Hydraulic Geometry.
- Binghamton Geomorphology Symposium, Oct. 2018, Syracuse, NY. Poster: Field Investigation of the Influence of Bank-Toe Critical Shear Stress on Suspension River Hydraulic Geometry.
- Wolman Club Meeting, May 2018, Baltimore, MD. Poster: A New Method for In-Situ Measurement of Cohesive Sediment Erodibility.
- American Geophysical Union (AGU) Fall Meeting, Dec. 2017, New Orleans, LA. Poster: Channel Bank Cohesion and the Maintenance of Suspension Rivers.
- Geological Society of America (GSA) Annual Meeting, Oct. 2017, Seattle, WA. Poster: Field Investigation of the Influence of Bank Toe Cohesion on Suspension River.
- Amtrak Club Meeting, May 2017, State College, PA. Poster: Evidence of, and a Proposed Explanation for, Observed Bi-stability in Alluvial Rivers.
- American Geophysical Union (AGU) Fall Meeting, Dec. 2016, San Francisco, CA. Poster: Evidence of, and a Proposed Explanation for, Observed Bi-stability in Alluvial Rivers.
- R²E²DS Meeting, May 2016, Reston, VA. Poster: Connecting Meteorology and Atmospheric Stability to Sand-Transporting Winds in a Dune Field.
- American Geophysical Union (AGU) Fall Meeting, Dec. 2015, San Francisco, CA. Poster: Limits on the morphological role of rainsplash transport in hillslope evolution.

ADDITIONAL WORK EXPERIENCE:

- Catastrophe Management Intern: Aon (Singapore) June 2012 - August 2012
- Undergraduate Research Assistant: to Rowena Lohman (Department of Earth and Atmospheric Sciences, Cornell University), 2011-2012.
- Undergraduate Research Assistant: to Charles Nittrouer (School of Oceanography, University of Washington), June 2011 - August 2011.
- Undergraduate Research Assistant: to Charles Nittrouer (School of Oceanography, University of Washington), June 2010 - August 2010.
- Undergraduate Research Assistant: to Hunter Lenihan (Bren School of Environmental Science and Management, University of California, Santa Barbara), June 2009 - August 2009.

COMPUTATIONAL PROFICIENCY: Python, Matlab, Arduino, ArcGIS, LaTeX

AFFILIATIONS: American Geophysical Union, Geological Society of America

MISCELLANEOUS:

- Certifications: PADI Open Water Scuba
- Languages: English (native), Mandarin Chinese (elementary)
- Citizenships: USA, UK