Jeffrey Stephen Kwang, US Citizen

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Employment

University of Minnesota, National Science Foundation Postdoctoral Fellow feb 2022 - feb 2024
Department of Earth & Environmental Sciences
Project Advisor: Andy Wickert
Secondary Project Advisor: Isaac Larsen
Project: Evolution of landscapes buried by Quaternary sediments

University of Massachusetts Amherst, Postdoctoral Associate aug 2019 - feb 2022
Department of Geosciences
Project Advisor: Isaac Larsen
Project: Numerical Modeling of Soil Organic Carbon Dynamics in the United States Midwest

University of Minnesota, Undergraduate Researcher jun 2012 - aug 2012
Saint Anthony Falls Laboratory
Project Advisor: Kimberly Hill
Project: Physical Modeling of the Role of Large Woody Debris in Streams

Education

University of Illinois Urbana-Champaign, Ph.D aug 2016 - jul 2019
Department of Civil and Environmental Engineering
Advisor: Gary Parker
Dissertation Title: *Overcoming Unrealistic Behavior of Landscape Evolution Models Attributed to the Stream Power Incision Model: Scale Invariance and Ultra-sensitivity to Initial Conditions*

University of Illinois Urbana-Champaign, M.S. aug 2013 - aug 2016
Department of Civil and Environmental Engineering
Advisor: Gary Parker
Thesis Title: *Effects of Differential Rainfall on the Dynamics of Landscape Evolution*

Johns Hopkins University, B.S aug 2009 - may 2013
Department of Environmental Engineering
Capstone Design Project: River Morphodynamics after the Removal of Bloede Dam

Honors

National Science Foundation Graduate Research Fellow 2015 - 2019
Ben Yen Fellowship, University of Illinois Urbana-Champaign 2013 - 2014
Lucien Brush Award for Excellence in Environmental Engineering, Johns Hopkins University 2013

Memberships

American Geophysical Union 2014 - present
Tau Beta Pi 2013 - present
Geological Society of America 2012

Service

AGU EPSP Pod Member, Unlearing Racism in Geoscience (URGE) 2021
Workshop Presenter, Eureka! at the University of Massachusetts Amherst 2020
Big Brother, Big Brothers Big Sisters of America of Central Illinois 2015 - 2019
Exhibitor, Engineering Open House at University of Illinois Urbana-Champaign 2014 - 2019

Proficiency

Numerical Modeling Development: River Morphodynamics, Landscape Evolution, Soil Dynamics, Hydraulics
Software and Coding: Python, MATLAB, R, ArcGIS, LaTeX, HEC-RAS, Microsoft Office, FORTRAN, Linux
Relevant Coursework: River Morphodynamics, Sediment Transport, Principles of Geomorphology, Open-Channel Hydraulics, Water Resoruces Field Methods, Surface Water Quality Modeling

Publications

Kwang, J. S., Langston, A. L. & Parker, G. The role of lateral erosion in the evolution of non-dendritic drainage networks to dendricity and the persistence of dynamic networks. Proceedings of the National Academy of Sciences of the United States of America 118, e2015770118 (2021).

Zhang, L., Li, T., Wang, G., Kwang, J. S., Nittrouer, J. A., Fu, X. & Parker, G. How canyons evolve by incision into bedrock: Rainbow Canyon, Death Valley National Park, United States. Proceedings of the National Academy of Sciences of the United States of America 117, 14730–14737 (2020).

Kwang, J. S. & Parker, G. Extreme Memory of Initial Conditions in Numerical Landscape Evolution Models. Geophysical Research Letters 46, 6563–6573 (2019).

Zhang, L., Stark, S., Schumer, R., Kwang, J. S., Li, T., Fu, X., Wang, G. & Parker, G. The Advective-Diffusive Morphodynamics of Mixed Bedrock-Alluvial Rivers Subjected to Spatiotemporally Varying Sediment Supply. Journal of Geophysical Research: Earth Surface 123, 1731–1755 (2018).

Kwang, J. S. & Parker, G. Landscape evolution models using the stream power incision model show unrealistic behavior when m/n equals 0.5. Earth Surface Dynamics 5, 807–820 (2017).

Presentations

Kwang, J. S., Thaler, E. A. & Larsen, I. J. Predicting anthropogenic soil organic carbon redistribution in the Midwestern United States. American Geophysical Union Fall Meeting (2020).

Kwang, J. S., Langston, A. L. & Parker, G. Steady state behavior and initial condition signal shredding in landscape evolution models incorporating lateral incision. American Geophysical Union Fall Meeting (2019).

Kwang, J. S. & Parker, G. Ultra-sensitivity of numerical landscape evolution models to their initial conditions. American Geophysical Union Fall Meeting (2018).

Kwang, J. S. & Parker, G. Interactions between landslides and landscape evolution using a sediment flux-dependent bedrock incision model incorporating bed macro-roughness. American Geophysical Union Fall Meeting (2017).

Kwang, J. S. & Parker, G. Landscape evolution using a sediment flux-dependent bedrock incision model incorporating bedrock macro-roughness. American Geophysical Union Fall Meeting (2016).

Kwang, J. S. Dynamic River Networks in Landscape Evolution Models. *Invited*. Ven Te Chow Hydrosystems Seminar (2016).

Kwang, J. S. & Parker, G. Scale Invariance in Landscape Evolution Models. American Geophysical Union Fall Meeting (2014).

Manuscript Reviewer

Earth Surface Dynamics, Geology, Geophysical Research Letters, Geoscientific Model Development, Journal of Geophysical Research: Earth Surface, Water Resources Research