ALAN KASPRAK

Fort Lewis College • Geosciences Department • Four Corners Water Center
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CURRENT POSITION

Assistant Professor **August 2020 - Present**
Fort Lewis College – Durango, Colorado
Geosciences Department and Four Corners Water Center

Hydrologist **May 2021 - Present**
U.S. Geological Survey – Flagstaff, Arizona
Southwest Biological Science Center, Grand Canyon Monitoring and Research Center

EDUCATIONAL BACKGROUND

Doctor of Philosophy in Watershed Sciences **October 2015**
Emphasis in Geomorphology and Earth Surface Processes
Utah State University – Logan, Utah
Ph.D. Dissertation: *Linking Form and Process in Braided Rivers Using Physical and Numerical Models*

Master of Science in Earth Sciences **June 2010**
Dartmouth College – Hanover, New Hampshire
M.S. Thesis: *Stream Channel and Riparian Response to Land-Use in Northern New England*

Bachelor of Science in Geology and Geophysics **May 2008**
Boston College – Chestnut Hill, Massachusetts
B.S. Thesis: *Measuring Sedimentation Rates and Land-Use Change in a Dam-Influenced Lake Delta: Narraguagus River, Maine*

RECENT EMPLOYMENT HISTORY

Coordinator, Utah Geospatial Consortium **July 2019 – July 2020**
Quinney College of Natural Resources
Utah State University – Logan, Utah

Hydrologist **October 2018 – June 2019**
U.S. Geological Survey
Central Midwest Water Science Center – Iowa City, Iowa

Mendenhall Postdoctoral Research Fellow **November 2015 – October 2018**
U.S. Geological Survey
Grand Canyon Monitoring and Research Center – Flagstaff, Arizona

ALAN KASPRAK

SCHOLARLY CONTRIBUTIONS

Also see Google Scholar profile

PEER-REVIEWED PUBLICATIONS

Sankey JB, **Kasprak A**, Chojnacki M, Titus T, Caster JC, Debenedetto G. 2022. Can we accurately predict sediment budgets on Mars? *Earth and Planetary Science Letters*.

Dott C, Bombaci S, **Kasprak A**, Korb J. 2022. A Tale of Two Rivers: Dam-Induced Hydrologic Drought on the Lower Dolores River and its impact on Tamarisk establishment. *Ecohydrology*. DOI: 10.1002/eco.2429.

Kasprak A, Jackson PR, Lindroth EM, Lund JW, Ziegeweid JR. 2022. The role of hydraulic and geomorphic complexity in predicting invasive carp spawning potential: St. Croix River, Minnesota and Wisconsin, United States. *PLoS ONE*. DOI: 10.1371/journal.pone.0263052.

Ferdowsi B, Gartner JD, Johnson K, **Kasprak A**, Miller KL, Nardin W, Ortiz AC, Tejedor A. 2021. Earthcasting: geomorphic forecasts for society. *Earth's Future*. DOI: 10.1029/2021EF002088.

Lane B, Guillon H, Byrne C, Pasternack G, **Kasprak A**, Sandoval-Solis S. 2021. Channel reach morphology and landscape properties are linked across a large heterogeneous region. *Earth Surface Processes and Landforms*. DOI: 10.1002/esp.5246.

Kasprak A, Sankey JB, Butterfield BJ. 2021. Future regulated flows of the Colorado River in Grand Canyon foretell increases in riparian vegetation and decreased areal extent of sediment. *Environmental Research Letters*. DOI: 10.1088/1748-9326/abc9e4.

Sankey JB, Sankey TT, Li J, Ravi S, Wang G, Caster JC, **Kasprak A.** 2021. Quantifying plant-soil-nutrient dynamics in rangelands: Fusion of UAV hyperspectral-LiDAR, UAV multispectral-photogrammetry, and ground-based LiDAR-digital photography in a shrub-encroached desert grassland. *Remote Sensing of Environment*. DOI: 10.1016/j.rse.2020.112223.

Grams PE, Dean DJ, Walker AE, **Kasprak A**, Schmidt JC. 2020. The roles of flood magnitude and duration in controlling channel width and complexity on the Green River in Canyonlands, Utah USA. *Geomorphology*. DOI: 10.1016/j.geomorph.2020.107438.

Kasprak A, Brasington J, Hafen K, Williams R, Wheaton JM. 2019. Modelling braided river morphodynamics using a particle travel distance framework. *Earth Surface Dynamics (ESurfD)* DOI: 10.5194/esurf-2018-17.

Kasprak A, Bransky N, Caster JC, Sankey TT, Sankey JB. 2019. The effect of topographic survey technique and data resolution on the interpretation of geomorphic change in river valleys. *Geomorphology*. DOI: 10.1016/j.geomorph.2019.02.020.

Kasprak A, Sankey JB, Buscombe D, Caster JC, East AE, Grams PE. 2018. Quantifying and Forecasting Changes in the Areal Extent of River Valley Sediment in Response to Altered Hydrology and Land Cover. *Progress in Physical Geography*. DOI: 10.1177/0309133318795846.

PEER-REVIEWED PUBLICATIONS- CONTINUED

Sankey JB, **Kasprak A**, Caster JC, East AE, Fairley HC. 2018a. The response of source-bordering aeolian dunefields to sediment-supply changes 1: Effects of wind variability and river-valley morphodynamics. *Aeolian Research*. DOI: 10.1016/j.aeolia.2018.02.005.

Sankey JB, **Kasprak A**, Caster JC, East AE, Fairley HC. 2018b. The response of source-bordering aeolian dunefields to sediment-supply changes 2: Controlled floods of the Colorado River in Grand Canyon, Arizona, USA. *Aeolian Research*. DOI: 10.1016/j.aeolia.2018.02.004.

Kasprak A, Caster J, Bangen S, Sankey J. 2017. Geomorphic Process from Topographic Form: Automating the Interpretation of Repeat Survey Data in River Valleys. *Earth Surface Processes and Landforms*. DOI: 10.1002/esp.4143.

Kasprak A, Hough-Snee N, Beechie T, Bouwes N, Brierley GJ, Camp R, Fryirs KA, Imaki H, Jensen ML, O'Brien G, Rosgen DL, Wheaton JM. 2016. The blurred line between form and process: a comparison of stream channel classification frameworks. *PLoS ONE*. DOI: 10.1371/journal.pone.0150293.

Hough-Snee N, **Kasprak A**, Rossi RK, Bouwes N, Roper BB, Wheaton JM. 2015. Hydrogeomorphic and biotic drivers of instream wood differ across sub-basins of the Columbia River Basin, USA. *River Research and Applications*. DOI: 10.1002/rra.2968.

Kasprak A, Wheaton JM, Ashmore PE, Hensleigh JW, Peirce SA. 2015. The relationship between particle travel distance and channel morphology: results from physical models of braided rivers. *Journal of Geophysical Research: Earth Surface* 120: 55-74. DOI: 10.1002/2014JF003310.

Hough-Snee N, **Kasprak A**, Roper BB, Meredith CS. 2014. Direct and indirect drivers of instream wood in the interior Pacific Northwest, USA: decoupling climate, vegetation, disturbance, and geomorphic setting. *Riparian Ecology and Conservation* 2: 14-34. DOI: 10.2478/remc-2014-0002.

Wheaton JM, Brasington J, Darby SE, **Kasprak A**, Sear D, Vericat D. 2013. Morphodynamic signatures of braiding mechanisms as expressed through change in sediment storage in a gravel-bed river. *Journal of Geophysical Research: Earth Surface* 118: 1-21. DOI: 10.1002/jgrf.20060.

Kasprak A, Magilligan FJ, Nislow KH, Renshaw CE, Snyder NP, Dade WB. 2013. Differentiating the relative importance of land cover change and geomorphic processes on fine sediment sequestration in a logged watershed. *Geomorphology* 185: 67-77. DOI: 10.1016/j.geomorph.2012.12.005.

Kasprak A, Magilligan FJ, Nislow KH, Snyder NP. 2012. A lidar-derived evaluation of watershed-scale large woody debris sources and recruitment mechanisms: coastal Maine, USA. *River Research and Applications* 28: 1462-1476. DOI: 10.1002/rra.1532.

PEER-REVIEWED PUBLICATIONS IN REVIEW AND PREPARATION

Sankey JB, Caster JC, **Kasprak A**, Fairley H. *In Review*. Aeolian response to fluvially-sourced sediment supply changes during large-scale river drying. *Journal of Geophysical Research: Earth Surface*.

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SCIENTIFIC REPORTS AND WHITE PAPERS

Wheeler K, Kuhn E, Bruckerhoff L, Udall B, Wang J, Gilbert L, Goeking S, **Kasprak A**, Mihalevich B, Neilson B, Salehabadi H, Schmidt JC. 2021. Alternative management paradigms for the future of the Colorado and Green Rivers. USU Center for Colorado River Studies; https://qcnr.usu.edu/coloradoriver/files/WhitePaper6.pdf

Kasprak A and Schmidt JC. Sedimentation of Lake Powell's tributary canyons, 1959 – 2017. 2020. USU Center for Colorado River Studies; cnr.usu.edu/coloradoriver/files/Kasprak%20Report_Dec20.pdf

East AE, Sankey JB, Fairley HC, Caster JC, **Kasprak A**. 2017. Modern landscape processes affecting archaeological sites along the Colorado River, Glen Canyon National Recreation Area, Arizona. USGS Scientific Investigations Report. DOI: 10.3133/sir20175082.

Kasprak A, Wheaton JM. 2012. Development of a rapid geomorphic assessment procedure for streams in the John Day River Watershed, Oregon. Prepared for EcoLogical Research, Providence, UT. 126 p.

THESES AND DISSERTATIONS

Kasprak A. 2015**.** Linking form and process in braided rivers using physical and numerical models. Ph.D. Dissertation. Utah State University, Logan UT. http://digitalcommons.usu.edu/etd/4513.

Kasprak A. 2010. Stream channel and riparian response to land-use in northern New England watersheds. M.S. Thesis. Dartmouth College, Hanover NH.

Kasprak A. 2008. Measuring Sedimentation Rates and Land-Use Change in a Dam-Influenced Lake Delta: Narraguagus River, Maine. B.S. Thesis. Boston College, Chestnut Hill MA.

SELECTED MEETING ABSTRACTS – PRIMARY AUTHOR ONLY

Kasprak A, Dott C. 2022. Riparian plant community response to contrasting modes of hydrologic alteration: implications for stream channel planform change on an intensively-managed desert river. *Ecological Society of America Annual Meeting.* Montreal, Quebec – August 14-19, 2022.

Kasprak A, Jackson PR, Lindroth EM, Lund JW, Ziegeweid JR. 2022. The importance of accounting for hydraulic and geomorphic complexity in riverine biophysical drift modeling. *EOS, Transactions, American Geophyiscal Union*. New Orleans, LA – December 13 -17, 2022.

Kasprak A and Schmidt JC. 2020. Historic Sedimentation and Projected Future Recovery of Lake Powell's Tributary Canyons. Upper Colorado River Basin Water Forum. Grand Junction, CO – November 4-5, 2020.

Kasprak A, Sankey JB, Buscombe D, Butterfield B, Caster J, Durning L, East AE, Grams PE. 2019. The historic dynamics and future trajectory of sediment availability along the Colorado River in Grand Canyon: results from field surveys and remote sensing. 11th Federal Interagency Sedimentation Conference. Reno, NV - June 24-28, 2019.

SELECTED MEETING ABSTRACTS – PRIMARY AUTHOR ONLY – CONTINUED

Kasprak A, Sankey JB, Buscombe D, Caster J, Durning L, East AE, Grams P. 2018. Flow alteration, river valley morphology, and the influence of Glen Canyon Dam on sediment availability along the Colorado River in Grand Canyon. *EOS, Transactions, American Geophysical Union*. Washington, D.C. – December 10 – 14, 2018.

Kasprak A, Bransky N, Caster J, Sankey JB, Sankey TT. 2017. The effect of topographic survey technique and resolution on the interpretation of geomorphic change in river valleys. *EOS, Transactions, American Geophysical Union*. New Orleans, LA – December 11-15, 2017.

Kasprak A, Bangen S, Buscombe D, Catser J, Grams PE, Sankey J. Linking fluvial and aeolian morphodynamics in the Grand Canyon, USA. 10th Symposium on River, Coastal, and Estuarine Morphodynamics. Padova, Italy – September 18-22, 2017.

Kasprak A, Buscombe D, Caster J, East AE, Grams PE, Sankey J. 2017. Linking fluvial and aeolian sediment transport in the Grand Canyon. 14th Biennial Conference of Science and Management on the Colorado Plateau. Flagstaff, AZ – September 11-14, 2017.

Kasprak A, Buscombe D, Caster J, Grams PE, Sankey JB. 2016. The Individual and Additive Effects of Vegetation Encroachment and Hydrologic Alteration on Sediment Connectivity in Grand Canyon. *EOS, Transactions, American Geophysical Union*. San Francisco, CA – December 12-16, 2016.

Kasprak A, Brasington J, Hafen K, Wheaton JM. 2015. An efficient and imperfect model for gravel-bed braided river morphodynamics: numerical simulations as exploratory tools. *EOS, Transactions, American Geophysical Union*. San Francisco, CA - December 14-18, 2015.

Kasprak A, Hafen K, Wheaton JM. 2015. A simplified morphodynamic model for gravel-bed rivers. 10th Federal Interagency Sedimentation Conference. Reno, NV - April 19-23, 2015. *Awarded Best Student Technical Paper*.

Kasprak A, Wheaton JM, Ashmore P, Peirce S. 2013. The sensitivity of sediment path-lengths to channel morphology: results from physical models of braided rivers. Braided Rivers Workshop. Die, France - June 23-27, 2014.

Kasprak A, Wheaton JM, Bouwes N, Weber NP, Trahan NC, Jordan CE. 2012. Toward a rapid synthesis of field and desktop data for classifying streams in the Pacific Northwest: guiding the sampling and management of salmonid habitat. *EOS, Transactions, American Geophysical Union*. San Francisco, CA - December 3-7, 2012.

Kasprak A, Wheaton JM. 2011. Modeling gravel bed river morphodynamics using a step-length-based approach. Community Surface Dynamics Modeling System 2011 Meeting: Impact of Time and Process Scales. Boulder, CO - October 28-30, 2011.

Kasprak A, Wheaton JM. 2011. A new step-length-based morphodynamic model of gravel-bed river evolution. *Abstracts with Programs*. Geological Society of America. Minneapolis, MN - October 8-12, 2011.

SELECTED MEETING ABSTRACTS – PRIMARY AUTHOR ONLY – CONTINUED

Kasprak A, Magilligan FJ, Nislow KH, Snyder NP. 2010. A lidar-derived evaluation of watershed-scale large woody debris sources and recruitment mechanisms: coastal Maine, USA. *EOS, Transactions, American Geophysical Union*. San Francisco, CA - December 13- 17, 2010.

Kasprak A, Magilligan FJ, Nislow KH, Snyder NP. 2009. Evaluating the impacts of land-use change on stream morphology in coastal Maine. *EOS, Transactions, American Geophysical Union*. San Francisco, CA - December 14-18, 2009.

Kasprak A, Magilligan FJ, Nislow KH, Snyder NP. 2009. A rapid, lidar-based delineation of watershed-scale large woody debris sources. *Abstracts with Programs*. Geological Society of America. Portland, OR - December 18-21, 2009.

Kasprak A, Arcone SA, Dade WB, Finnegan DC, Magilligan FJ, Renshaw CE. 2008. Using ground penetrating radar to estimate sediment accumulation in a reservoir: Ball Mountain Dam, West River, Vermont. *EOS, Transactions, American Geophysical Union*. San Francisco, CA - December 15-19, 2008.

RESEARCH FUNDING

U.S. National Science Foundation *(pending)* $292,127
Research Grant (2022)
'Sticky Landscapes, Smooth Landscapes, and all the Sediment Transport we don't Measure'

U.S. National Science Foundation *(declined)* $2,400,000
Research Grant (2022); with PI Cari Johnson, University of Utah
'Legacy Landscapes and Rapid Returns: Anthropogenic Sediment of Lake Powell'

National Aeronautics and Space Administration *(declined)* $876,000
Research Grant (2021); with PI Joel Sankey, USGS
'Sediment Transport Analogs Using River Valley Eolian Dunefields'

University of New Mexico $5,000
Research Grant (2021)
'Tracking Material Fluxes through Dryland Ecosystems'

Colorado Water Conservation Board $241,000
Research Grant (2020); with PI Gigi Richard, FLC
'Dolores River Adaptive Management Support'

Fort Lewis College $6,000
Research Grant (2020)
Byron Dare Research Award and Faculty Development Grants

Glen Canyon Institute $16,111
Research Grant (2020; with PI Jack Schmidt, Utah State University)
'Sediment Remobilization in Lake Powell Reservoir'

RESEARCH FUNDING - CONTINUED

Minnesota Department of Natural Resources $30,000
Research Grant (2018) – 'Asian Carp Habitat Suitability Modeling: St. Croix River'

University of Wyoming/U.S. National Park Service $5,000
Research Grant (2017) – The Eco-geomorphic Importance of Wood in Braided Rivers'

National Center for Earth Surface Dynamics $100,000
Synthesis Postdoctoral Fellowship (2016 & 2017)

NASA/Northern Arizona University $2,200
Space Grant Undergraduate Research Funding (2016)
Co-authored with T.T. Sankey

United States Geological Survey $115,000
Mendenhall Postdoctoral Research Fellowship (2015)

Utah State University
Doctoral Dissertation Completion Award (2015)

National Science Foundation $271,000
Research Grant (2012) – 'Sensitivity of Braided River Morphodynamics to Sediment Supply'
Co-authored with PI J.M. Wheaton

Geological Society of America (2009) $2,500
Graduate Student Research Grant

TEACHING BACKGROUND

INSTRUCTOR – Full Length Courses

Fort Lewis College
- BIO/GEO/ENVS 476, River Eco-Geomorphology — Fall 2022
- GEOG 315, GIS Programming and Web Mapping — Fall 2020-22
- GEOG 400, Advanced GIS – Raster — Fall 2020-22
- GEOG 310, Introduction to GIS and Computer Mapping — Spring 2021-22
- GEOG 325, Introduction to Remote Sensing — Spring 2021-22

Utah State University
- NR 6930, Advanced GIS for Natural Resources Management — Fall 2019
- NR 6920, Python Programming for GIS — Spring 2020

INSTRUCTOR – Short Courses

National Center for Earth Surface Dynamics
- Summer Institute for Earth Surface Dynamics — 2016 & 2017

Intermountain Center for River Restoration and Rehabilitation
- Geomorphic Change Detection: Restoration Monitoring — 2011 & 2014

Utah State University Watershed Sciences Graduate Induction Course
- An Introduction to Stream and Landscape Classification — 2013 & 2014

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GRADUATE STUDENT INSTRUCTOR/TEACHING ASSISTANT

Utah State University – Watershed Sciences Department

Watershed Sciences Graduate Induction Course 2012

Intermountain Center for River Restoration and Rehabilitation

Geomorphology and Sediment Transport in Channel Design 2011

Dartmouth College Department of Earth Sciences

Introduction to Earth Science 2008 & 2010

Off-Campus Program (Western U.S. Geology) 2009

Oceanography 2009

Earth's Past, Present, and Future Climate 2009

STUDENTS SUPERVISED OR MENTORED

Fort Lewis College

Mathew McCormick, B.S. in Geology – 2022

Scott Thomas, B.S. in Geology - 2022

Nathan Hunter, B.S. in Geology - 2021

Mike Ward, B.S. in Environmental Studies - 2021

Kara Tschirhart, B.S. in Environmental Studies - 2021

Madeline Roberts, B.S. in Environmental Studies - 2021

Charles Brockway, B.S. in Environmental Studies – 2020

Ethan Cranmer, GIS Certificate – 2020

University of Illinois

Evan Lindroth, M.S. in Geography – 2019

Northern Arizona University

Nathaniel Bransky, B.S. in Environmental Science – 2016 to 2018

Utah State University

Konrad Hafen, B.S. in Watershed Sciences – 2014

Dartmouth College

Rohan Chaudhary, A.B. in Environmental Earth Sciences, Biology – 2012

STUDENTS SUPERVISED OR MENTORED

Brynne Weeks, A.B. in Engineering – 2012

INVITED LECTURES AND SEMINARS

USGS Astrogeology Science Center

Can we trust measurements of landscape change in places we can't visit? 2021

Fort Lewis College and *Four Corners Geological Society*

Flow alteration, river valley morphology, and the influence of Glen Canyon Dam on sediment availability along the Colorado River in Grand Canyon 2020

USU Center for Colorado River Studies, Moab Lecture Series

Sedimentation of Lake Powell's Tributary Canyons, 1959 – 2017 2020

Colorado Mountain College, Leadville

Using Geographic Information Systems to Guide Natural Resources Management 2018

University of Virginia

University of Colorado, Boulder

Technological Innovation and the Forefront of River Science 2018

The Nature Conservancy

River Science at the Interface of the Physical, Biological, and Anthropogenic 2017

INVITED LECTURES AND SEMINARS - CONTINUED

National Center for Earth Surface Dynamics
Connecting Life and Landscape Using Ecohydraulic Models 2016

USGS Grand Canyon Monitoring and Research Center
Linking Sediment Transport and Channel Morphology in Braided Rivers 2015

Utah State University, Fluvial Hydraulics and Ecohydraulics Seminar
An Introduction to Two-Dimensional Ecohydraulic Modeling 2014

Leeds University
A Simplified Approach to Modeling Braided River Morphodynamics 2013

SERVICE AND OUTREACH ACTIVITIES

EDITORIAL POSITIONS

Associate Editor, 2021 – Present. *Journal of Geophysical Research: Earth Surface*

CONFERENCE SYMPOSIA CONVENED

Biophysical interactions in rivers: processes, feedbacks, and restoration. *With* Sharon Bywater-Reyes, University of Northern Colorado, Katherine Lininger, University of Colorado at Boulder, and Derek Schook, U.S. National Park Service. *EOS, Transactions, American Geophysical Union*. New Orleans, LA – December 13-17, 2021.

The influence of vegetation and large wood on water, sediment, and nutrient dynamics in fluvial and coastal environments. *With* Katherine Lininger, University of Colorado at Boulder, Matthew Hiatt, Louisiana State University, and Anastasia Piliouras, Los Alamos National Laboratory. *EOS, Transactions, American Geophysical Union*. Washington, DC – December 10-14, 2018.

Morphodynamics of fluvial, aeolian, hillslope, and coastal environments characterized using high-resolution topography and bathymetry. 2015. *With* Paul E. Grams and Joel B. Sankey, U.S. Geological Survey, and Devin M. Lea, University of Oregon. *EOS, Transactions, American Geophysical Union*. San Francisco, CA - December 14-18, 2015.

Using predictive models to inform river management and restoration. 2013. *With* Gregory Pasternack, UC Davis. *EOS, Transactions, American Geophysical Union*. San Francisco, CA - December 9-13, 2013.

MEDIA COVERAGE

- KJZZ Arizona Public Radio (2021): New study examines Colorado River Flows, Loss of Beaches
- KNAU Arizona Public Radio (2021): Grand Canyon is Losing Bare Sand
- Utah Public Radio (2016): Classification Systems for Rivers More Complementary than Expected
- Utah State Today and phys.org (2016): USU Scholars Forge Unprecedented Common Ground in River Classification
- Utah State Today (2013): USU Scientists' Work Highlighted in American Geophysical Union Journal

ALAN KASPRAK

OUTREACH

- Mountain Middle School, Durango (2020): provided guest lecture to middle school students on river processes and watershed science
- Dartmouth College (2016 – 2019): provided guest seminars on western water management and geomorphology of the Colorado River in Grand Canyon National Park
- Grand Canyon Youth (2016 & 2017): instructor on Partners-in-Science Grand Canyon river trip; led students ages 15-19 in structure-from-motion topographic surveys along Colorado River
- Scientists in the Classroom (2016-2019): served as pen-pal mentor to middle school students introducing them to careers in Earth Science

AD-HOC REVIEWER – Academic Journals

- *River Research and Applications*
- *eSurfD*
- *Hydrological Processes*
- *Journal of Geophysical Research: Earth Surface*
- *Progress in Physical Geography*
- *Ecohydrology*
- *Water*
- *Sustainability*
- *International Journal of Geo-Information*
- *Earth Surface Processes and Landforms*

AD-HOC REVIEWER – Funding Agencies

- *U.S. Department of Energy*
- *U.S. National Science Foundation*