

ALAN KASPRAK

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

Assistant Professor

August 2020 - Present

Geosciences Department and Four Corners Water Center
Fort Lewis College – Durango, Colorado

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

Kasprak A, Sankey JB, Butterfield BJ. In Review. 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](https://doi.org/10.1088/1748-9326/abc9e4).

Sankey JB, Sankey TT, Li J, Ravi S, Wang G, Caster JC, **Kasprak A**. 2020. UAV hyperspectral-lidar and multispectral-photogrammetry fusion for quantifying plant-soil-nutrient dynamics in rangelands. *Remote Sensing of Environment*. DOI: [10.1016/j.rse.2020.112223](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/10.1177/0309133318795846).

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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/10.1002/rra.2968).

ALAN KASPRAK

PEER-REVIEWED PUBLICATIONS- CONTINUED

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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/10.1002/rra.1532).

PEER-REVIEWED PUBLICATIONS IN REVIEW AND PREPARATION

Ferdowsi B, Gartner J, Johnson KN, **Kasprak A**, Miller KL, Nardin W, Ortiz AC, Perignon MC, Tejedor A. *In Review*. Earthcasting: geomorphic prediction for society. *Earth's Future*.

Kasprak A, Jackson PR, Lindroth EM, Lund JW. *In Review*. The role of hydraulic and geomorphic complexity in forecasting Asian Carp spawning potential: St. Croix River, Minnesota, USA. *PLoS ONE*.

SCIENTIFIC REPORTS

Kasprak A and Schmidt JC. 2019. Sedimentation of Lake Powell's tributary canyons, 1959–2017. USU Center for Colorado River Studies; [report available online](#).

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](https://doi.org/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.

ALAN KASPRAK

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.

MEETING ABSTRACTS

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.

Sankey JB, Sankey T, Li JJ, Ravi S, Wang G, Caster J, **Kasprak A.** 2020. UAV remote sensing of plant-soil-nutrient dynamics in burned rangeland. *EOS, Transactions, American Geophysical Union*. Virtual Meeting – December 1 – 17, 2020.

Ferdowsi B, Gartner J, Johnson KN, **Kasprak A**, Miller KL, Nardin W, Ortiz AC, Perignon MC, Tejedor A. 2020. Earthcasting: geomorphic prediction for society. *EOS, Transactions, American Geophysical Union*. Virtual Meeting – December 1 – 17, 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.

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, Caster 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.

ALAN KASPRAK

MEETING ABSTRACTS - CONTINUED

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.

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.

ALAN KASPRAK

RESEARCH FUNDING

Colorado Water Conservation Board, Water Supply Reserve Fund Research Grant (2020; with PI Gigi Richard, Fort Lewis College) 'Dolores River Adaptive Management Support'	\$236,900
Fort Lewis College Byron Dare Research Awards and Faculty Development Grant	\$4,500
Glen Canyon Institute Research Grant (2020; with PI Jack Schmidt, Utah State University) 'Sediment Remobilization in Lake Powell Reservoir'	\$16,111
Minnesota Department of Natural Resources Research Grant (2018) – 'Asian Carp Habitat Suitability Modeling: St. Croix River'	\$30,000
University of Wyoming/U.S. National Park Service Research Grant (2017) – The Eco-geomorphic Importance of Wood in Braided Rivers'	\$5,000
National Center for Earth Surface Dynamics Synthesis Postdoctoral Fellowship (2016 & 2017)	\$100,000
NASA/Northern Arizona University Space Grant Undergraduate Research Funding (2016) Co-authored with T.T. Sankey	\$2,200
United States Geological Survey Mendenhall Postdoctoral Research Fellowship (2015)	\$115,000
Utah State University Doctoral Dissertation Completion Award (2015)	\$20,000
National Science Foundation Research Grant (2012) – 'Sensitivity of Braided River Morphodynamics to Sediment Supply' Co-authored with PI J.M. Wheaton	\$271,000
Geological Society of America (2009) Graduate Student Research Grant	\$2,500
Dartmouth College (2009) Graduate Student Research Grant	\$1,000

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TEACHING BACKGROUND

INSTRUCTOR – Full Length Courses

Fort Lewis College

GEOG 315, GIS Programming and Web Mapping Fall 2020

GEOG 400, Advanced GIS – Raster Fall 2020

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

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

Kara Tschirhart, B.S. in Environmental Science – 2021 – Present

Madeline Roberts, B.S. in Environmental Science – 2021 – Present

Mike Ward, B.S. in Environmental Science – 2021 – Present

Nathan Hunter, B.S. in Geosciences – 2021 – Present

Charles Brockway, B.S. in Environmental Studies – 2020 to 2021

Ethan Cranmer, GIS Certificate – 2020 to 2021

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

Brynne Weeks, A.B. in Engineering – 2012

ALAN KASPRAK

INVITED LECTURES AND SEMINARS

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

Fort Lewis College

Geographic information systems, big data, and the influence of Glen Canyon Dam on 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 and 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

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

CONFERENCE SYMPOSIA CONVENED

Advances and applications of river science in the West. *With* Sharon Bywater-Reyes, University of Northern Colorado. *Geological Society of America Rocky Mountain Section Meeting*, Fort Collins, Colorado – May 4-5, 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.

ALAN KASPRAK

MEDIA COVERAGE

- 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](#)

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*
- *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