

Curriculum vitae
James T. Dietrich

Department of Geography
University of Northern Iowa

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EDUCATION

Ph.D. University of Oregon, 2014

Geography, Dissertation: *Applications of Structure-from-Motion Photogrammetry to Fluvial Geomorphology.*

M.Sc. Texas State University-San Marcos, 2008

Geography, Thesis: *Quantitative Assessment of Landscape Change Using Georeferenced Repeat Photography in Glacier National Park, Montana, USA.*

B.Sc. University of Kansas, 2006

Physical Geography, Senior Research Project: *Beach Erosion and Storm Protection: Is Beach Nourishment the Answer for the Outer Banks of North Carolina.*

EXPERIENCE

Professional Appointments

- 2017 **University of Northern Iowa**, Department of Geography
Assistant Professor (Fall 2017 – Present)
Director, Iowa Low-Altitude Remote Sensing Lab (I-LARS) (Fall 2017 – Present)
- 2014 **Dartmouth College**, William H. Neukom Institute for Computational Science
Neukom Postdoctoral Fellow (Fall 2014 – Summer 2017)

Other Academic Experience

- 2011 **University of Oregon**, Department of Geography
Doctoral Teaching/Research Fellow (Fall 2011 – Spring 2014)
- 2010 **Texas State University-San Marcos**, Department of Geography
Doctoral Teaching Assistant (Fall 2010 – Spring 2011)
- 2006 **Texas State University-San Marcos**, Department of Geography
Graduate Teaching Assistant (Fall 2006 – Spring 2008)
- 2005 **University of Kansas**, Department of Geography
Undergraduate Teaching Assistant (Summer 2005)

Professional Experience

- 2008 **Jeppesen Sanderson, Inc. – a Boeing Company**
 Senior Remote Sensing Analyst / Technical Specialist (October 2009 - August 2010)
 Cartographer (July 2008 – October 2009)
National Geospatial Intelligence Agency contracts for aeronautical charting and aviation obstacle mapping
- 2008 **The University of Texas at Austin**, Center for Space Research - Mid-American
 Geospatial Information Center (MAGIC)
 Remote Sensing Analyst (Summer 2008)
- 2003 **Kansas Geological Survey**
 Technical Research Assistant (Fall 2003 – Spring 2006)

CERTIFICATIONS

Federal Aviation Administration (FAA) Licensed Remote Pilot
 Remote Pilot Certificate with Small Unmanned Aircraft Rating. Expires 30 Sept 2022.

PUBLICATIONS

Refereed Publications (* Student-led publications)

- 2021 Magilligan, F.J., K. Nislow, **J.T. Dietrich**, H. Boyle, B. Kynard. Transient versus sustained biophysical responses to dam removal. 2021. *Geomorphology* 398:107836.
 DOI: 10.1016/j.geomorph.2021.107836 ([LINK](#))
- 2021 *Morgan, B.E., D.T. Bolger, J.W. Chipman, **J.T. Dietrich**. 2021. Multi-sensor fusion of unmanned aerial vehicle (UAV) and Landsat imagery for spatiotemporal analysis of vegetation cover change in a large ephemeral river. *Remote Sensing* 13(1), 51.
 DOI: 10.3390/rs13010051 ([LINK](#))
- 2020 Carboneau, P.E., S.J. Dugdale, T.P. Brackon, **J.T. Dietrich**, M.A. Fonstad, H. Miyamoto, A.S. Wooget. 2020. Adopting deep learning methods for airborne RGB fluvial scene classification. *Remote Sensing of Environment* 251:112107.
 DOI: 10.1016/j.rse.2020.112107 ([LINK](#))
- 2020 *Morgan, B.E., D.T. Bolger, J.W. Chipman, **J.T. Dietrich**. 2020. Longitudinal and latitudinal distribution of riparian vegetation along an ephemeral river in Namibia using remote sensing techniques. *Journal of Arid Environments* 181:104220.
 DOI: 10.1016/j.jaridenv.2020.104220 ([LINK](#))
- 2019 Woodget, A.S., **J.T. Dietrich**, R.T. Wilson. 2019. Quantifying Below-Water Fluvial Geomorphic Change: the Implications of Refraction Correction, Water Surface Elevations and Spatially Variable Error. *Remote Sensing* 11(20). DOI: 10.3390/rs11202415 ([LINK](#))

- 2019 Magilligan, F.J., A. James, S. Lecce, **J.T. Dietrich**, J. Kupfer. 2019. Geomorphic responses to extreme rainfall, catastrophic flooding, and dam failures across an urban to rural landscape. *Annals of the American Association of Geographers* 109 (3): 705–729. DOI: 10.1080/ 24694452.2018.1507814. ([LINK](#))
- 2018 *Heindel, R.C., J.W. Chipman, **J.T. Dietrich**, R.A. Virginia. 2018. Quantifying rates of soil deflation with Structure-from-Motion photogrammetry in west Greenland. *Arctic, Antarctic, and Alpine Research* 50(1). DOI: 10.1080/15230430.2017.1415852 ([LINK](#))
- 2017 **Dietrich, J.T.** 2017. Bathymetric Structure from Motion: Extracting stream bathymetry from multi-view stereo photogrammetry. *Earth Surface Processes and Landforms* 42(2): 355–364. DOI: 10.1002/esp.4060 ([LINK](#))
- 2017 Carboneau, P.E., **J.T. Dietrich**. 2017. Cost-Effective Non-Metric Photogrammetry from Consumer-Grade sUAS: Implications for Direct Georeferencing of Structure from Motion Photogrammetry. *Earth Surface Processes and Landforms* 42(3): 473–486. DOI: 10.1002/esp.4012 ([LINK](#))
- 2016 Atha, J.B., **J.T. Dietrich**. 2016. Detecting Fluvial Wood in Forested Watersheds Using LiDAR Data: A Methodological Assessment. *River Research and Applications* 32(7): 1587–1596. DOI: 10.1002/rra.2989 ([LINK](#))
- 2016 **Dietrich, J.T.** 2016. Riverscape Mapping with Helicopter-Based Structure-from-Motion Photogrammetry. *Geomorphology* 252: 114–157. DOI: 10.1016/j.geomorph.2015.05.008 ([LINK](#))
- 2013 Fonstad, M.A., **J.T. Dietrich**, B.C. Courville, J.L. Jensen, P.E. Carboneau. 2013. Topographic structure from motion: a new development in photogrammetric measurement. *Earth Surface Processes and Landforms* 38(4): 421–430. DOI: 10.1002/esp.3366 ([LINK](#))

Book Contributions

- 2016 **Dietrich, J.T.**, 2016. Instantaneous Structure-from-Motion (ISfM) for Dynamic Geomorphology. In *Structure-from-Motion for the Geosciences*. Eds. Carrivick, J., M. Smith, D. Quincy. Wiley-Blackwell.

In Review / Revision

None

In Preparation

Applicability of modelled water surface elevations for bathymetric structure from motion corrections. In preparation for *Earth Surface Processes and Landforms*.

Non-Refereed Publications

- 2016 Shervais, K., **J.T. Dietrich**. 2016. Structure from Motion (SfM) Photogrammetry Data Exploration and Processing Manual. UNAVCO. ([LINK](#))

- 2014 **Dietrich, J.T.** 2014. Applications of Structure-from-Motion Photogrammetry to Fluvial Geomorphology. Ph.D. Dissertation, University of Oregon.
- 2013 McDowell, P.F., **J.T. Dietrich**. 2013. Willamette Sustainable River Project Phase 2: Development of a Monitoring Plan for Environmental Flow Recommendation on the Middle Fork Willamette River, Oregon. Report to the U. S. Army Corps of Engineers. Research Cooperative Agreement W912HZ-10-2-0044.
- 2008 **Dietrich, J.T.** 2008. Quantitative assessment of landscape change using georeferenced repeat photography in Glacier National Park, Montana, USA. MS Thesis, Texas State University-San Marcos.

Various Online Technical/Methods Tutorials. <http://adv-geo-research.blogspot.com>

PUBLISHED SOFTWARE

All software is available on GitHub: <http://www.github.com/geojames>

- Dietrich, JT (2019). pyBathySfM v4.0 (as developed on Github)
DOI: [10.5281/zenodo.3377602](https://doi.org/10.5281/zenodo.3377602)
Python code for performing an iterative, multi-camera refraction correction on Structure from Motion point clouds. (2017 ESPL article & 2019 RSE above)
- Dietrich, James T., Patrice Carboneau. 2019. Hyperscale Rivers v1.0. (as developed on Github)
DOI: [10.5281/zenodo.3382267](https://doi.org/10.5281/zenodo.3382267)
Python code for creating hyperscale graphs for multi-spatial scale data comparisons
- Carboneau, P.E., S.J. Dugdale, T.P. Brackon, **J.T. Dietrich**, M.A. Fonstad, H. Miyamoto, A.S. Wooget. Self-Supervised-Classification v1.0 (as developed on Github)
DOI: [10.5281/zenodo.3386590](https://doi.org/10.5281/zenodo.3386590)
Python code for self-supervised classification of remotely sensed imagery - part of the Deep Riverscapes project. (2020 RSE Article)
- py_streamNormalcoords - Python code for transforming x,y coordinates into a curvilinear coordinate system based on a stream centerline.

RESEARCH GRANTS

Funded (* Student-led)

- 2020 Low-cost stream gauges for early flood warnings. (PI, \$6,732)
University of Northern Iowa, Research and Sponsored Programs – Capacity Building Grant
- 2019 Next-Generation Riverscape Mapping and Monitoring. (Co-PI, \$300,000 – 2 years)
National Science Foundation – Geography and Spatial Science (GSS) EAGER Award #1934253
- 2019 Development of dynamic 360° imagery and video virtual resources for Prairie of Farms and Integrated Roadside Vegetation Management programs. (Co-PI – 2 years)

- Iowa Department of Agriculture and Land Stewardship - State Soil Conservation & Water Quality Committee (\$27,619)*
- 2018 Developing an open-source, real-time kinematic GPS for UAS Applications (PI, \$2,420)
University of Northern Iowa, Office of the Provost
- 2018 *Impacts on Student Learning and Understanding of Water Quality through International Citizen Science Opportunities (PI, \$3,847)
University of Northern Iowa, Office of the Provost
- 2018 Acquisition of a Hyperspectral Field Spectroradiometer to Enable Interdisciplinary Research. (Co-PI, \$77,601)
National Science Foundation – EAR Major Research Instrumentation Program Award #1828402.
- 2017 Drone boats for coupled geomorphic and ecologic monitoring of dam removals. (PI, \$5,474)
University of Northern Iowa, Research and Sponsored Programs – Capacity Building Grant
- 2017 Accuracy Assessment of Directly Georeferenced sUAS Photogrammetry. (PI, \$6,278)
University of Northern Iowa, College of Social and Behavioral Science – New Faculty Summer Research Grant
- 2015 Patterns of Fluvial Sedimentation and Geomorphic Change Following an Extreme Flood Event. (Key Personnel, \$49,341)
National Science Foundation RAPID Award #1615154 (GSS & GLD)
- 2015 Smart Cameras Meet Smart Rocks: Quantifying Stream Channel Responses to Natural and Human-Induced Disturbances. (Co-PI, \$49,341)
Dartmouth College – Office of the Provost: Seed Funding Program
- 2014 Neukom Postdoctoral Fellowship Research Funding. (PI, \$8,000)
Dartmouth College
- 2014 Sub-meter Remote Sensing for Fluvial Monitoring with Helicopter-based Structure-from-Motion Photogrammetry. (PI, \$5,500)
U.S. Bureau of Reclamation / Oregon Watershed Enhancement Board
- 2013 Low-cost Remote Monitoring Camera System for Granite Boulder Creek. (\$250)
University of Oregon ASPRS Summer Research Grant
- 2013 Applications of Structure-from-Motion Photogrammetry to Fluvial Geomorphology. (\$500)
University of Oregon Graduate School Research Award
- 2007 Landscape change detection using panoramic repeat photography, Glacier National Park, Montana. (\$1,000)
The Explorers Club, Exploration Fund

- 2005 Beach Erosion and Storm Protection: Is Beach Nourishment the Answer for the Outer Banks of North Carolina. (\$1,500)
University of Kansas Honors Program, Undergraduate Research Award

Submitted/In Review

- 2021 Modeling Solar Radiation Potential and Urban Heat Utilizing Mobile Sensors and Topographic Data. (Co-PI, \$170,370)
Iowa Energy Center, Submitted June 11, 2021.

In Preparation

None

Not Funded

- 2019 Longitudinal Connectivity of Riverine Habitats. Co-PI – NSF GSS and GLD (\$678,256)

AWARDS

- 2019 College of Social and Behavioral Science Faculty Research Award
 University of Northern Iowa
- 2012 Outstanding Student Paper Award, Hydrology Section
 American Geophysical Union, Fall Meeting
- 2007 Outstanding Graduate Student Service Award
 Texas State University-San Marcos, Department of Geography

TEACHING

UG – Undergraduate, G – Graduate

University of Northern Iowa

Physical Geography + Lab – UG
 Unmanned Aerial Systems Certification – UG & G
 GIS Applications: Digital Terrain Analysis – UG & G
 Drones for Mapping and Communication – UG & G
 Environmental Data Analysis (Python Programming) – UG & G
 Advanced UAS Mapping – UG & G
 Rivers – UG & G
 History of Geographic Thought – G
 Research Design – G

Dartmouth College

Python Programming for Geography and Earth Science – UG & G
 Environmental Applications of GIS – UG & G

University of Oregon

Remote Sensing I (Instructor of record) – UG & G
 Remote Sensing I (Lab) – UG & G
 Remote Sensing II (Lab) – UG & G

Python Programming for GIS (Lab) – UG & G

Texas State University-San Marcos

Introduction to Physical Geography (Instructor of record) – UG

Introduction to Physical Geography (Lab) – UG

Physical Geography Field Methods (Lab) – UG & G

University of Kansas

Visualizing Spatial Data (Lab) – Visual Basic programming for GIS – UG & G

ADVISING

Thesis Committees Chaired

2021 Paula Carvalho De Castro (MA, Expected Spring 2021)

2021 Ryan Lange (MA, Expected Spring 2021)

2017 Aaron Padilla (MA, 2018, UNI)

Committee Membership

2020 Katelyn Miner (MA, University of Northern Iowa)

2020 Nikolay Golosov (MA, University of Northern Iowa)

2019 Md. Atiqur Rahman (MA, University of Northern Iowa)

2019 Taylor Garton (MA, University of Northern Iowa)

2019 Daniel Murphy (MA, University of Northern Iowa)

2017 Bryn E. Morgan (Senior Honors Thesis, Dartmouth)

2017 Samuel J. Merrens (Senior Thesis, Dartmouth)

2016 Bradley J. Garczynski (Senior Thesis, Dartmouth)

Undergraduate Research Experiences Supervised

2020 Noah Kremer (UNI): Applications of Machine Learning in GIS.

2018 Blair Mirka (UNI): Spatial modeling of invasive Lion fish habitat.

2017 Jacob Sundholm (UNI): Scratch-built hexacopter for low-altitude remote sensing.

PRESENTATIONS

Invited Presentations

2021 High-resolution change detection in fluvial environments.
IAG - International Geomorphology Week, March 4, 2021.

2020 Drones for River Monitoring
University of Illinois Geography Colloquium. October 20, 2020.

2018 Drones for River Assessment and Restoration Monitoring
130th Annual Meeting, Iowa Academy of Sciences. Storm Lake, IA. April 20, 2018.

2018 Drones for River Assessment and Restoration Monitoring
American Fisheries Society North Central Division, Rivers and Stream Technical
Committee Annual Spring Meeting. Milan, IL. March 28, 2018

- 2017 Bathymetric Structure from Motion: Extracting stream bathymetry from multi-view stereo photogrammetry.
20th annual conference of the Centre Interuniversitaire de Recherche sur le Saumon Atlantique (CIRSA). Université Laval, Quebec City, June 27, 2017
- 2017 Thinking outside the toolbox: New tools and hobby electronics for physical geography.
University of Northern Iowa, Department of Geography Colloquium. Cedar Falls, IA, March 24, 2017.
- 2016 Structure-from-Motion for Habitat Restoration Monitoring.
Washington Department of Fish and Wildlife Habitat Program. Olympia, WA, March 25, 2016.
- 2015 Instantaneous Structure-from-Motion for Monitoring Dynamic Geomorphology
Durham University Geography. Durham, UK, September 18, 2015
- 2015 Remote Sensing of Rivers: Crossover between Geomorphology and Lotic Ecology
Dartmouth College, Ecology and Evolutionary Biology. Hanover, NH, January 13, 2015
- 2014 Low-cost 3D Data Collection with Structure-from-Motion Photogrammetry
Dartmouth College, Earth Science Geolunch. Hanover, NH, October 14, 2014.
- 2012 Structure-from-Motion Mapping for Geomorphology.
Oregon State University Geomorphology Brown Bag. April 17, 2012.
- 2011 The Classroom as a Window on the World: Using Google Earth as a Lecture Tool
University of Oregon ASPRS Student Chapter, Winter Lecture. February 14, 2012.

Conference Presentations

- 2021 **Dietrich, J.T.**, M.A. Fonstad. High-Precision 3D Fluvial Surveying Without Ground Control using Directly Georeferenced Pole Aerial Photography (Oral). American Association of Geographers Annual Meeting. April 8, 2020. Online.
- 2020 **Dietrich, J.T.**, M.A. Fonstad, A. Zettler-Mann. Open-source surface watercraft for Riverscape mapping (Poster - EGU2020-4291). European Geoscience Union General Assembly. May 4, 2020. Virtual Meeting (Vienna).
- 2019 **Dietrich, J.T.**, M.A. Fonstad, A. Zettler-Mann. Riverscape mapping with an open-source autonomous surface watercraft (Poster - H41L-1869). American Geophysical Union, Fall Meeting. December 12, 2019. San Francisco.
- 2019 **Dietrich, J.T.**, A.S. Woodget. Bathymetric Change Detection from the Air (Oral). American Association of Geographers Annual Meeting. April 6, 2019. Washington, D.C.

- 2018 **Dietrich, J.T.**, A.S. Woodget. Bathymetric SfM Change Detection on the Teme River, UK (Oral - G53A-04). American Geophysical Union, Fall Meeting. December 14, 2018. Washington, D.C.
- 2018 **Dietrich, J.T.**, A.S. Woodget. Bathymetric Structure-from-Motion: Change Detection and Technical Improvements (Poster). American Association of Geographers Annual Meeting April 12, 2017. New Orleans.
- 2017 **Dietrich, J.T.** Bathymetric Structure from Motion: Extracting stream bathymetry from multi-view stereo photogrammetry (Oral). American Association of Geographers Annual Meeting April 4, 2017. Boston.
- 2016 **Dietrich, J.T.** Bathymetric Structure from Motion: Extracting stream bathymetry from multi-view stereo photogrammetry (Oral - EP24C-04). American Geophysical Union, Fall Meeting. December 13, 2016. San Francisco.
- 2016 **Dietrich, J.T.**, J.B. Atha. Detecting Fluvial Wood in Forested Watersheds Using LiDAR Data (Oral). Association of American Geographers Annual Meeting. March 30, 2016. San Francisco.
- 2016 **Dietrich, J.T.**, P. McDowell, J. Duffin Ground and UAV-based Structure-from-Motion photogrammetry for river assessment and restoration monitoring (Oral – Presented by P. McDowell). River Restoration Northwest (RRNW) - 15th Annual River Restoration Symposium. February 2, 2016. Stevenson, Washington.
- 2015 **Dietrich, J.T.**, J. Duffin. High-Resolution 3D Bathymetric Mapping for Small Streams Using Low-Altitude Aerial Photography (Oral - EP54B-01). American Geophysical Union, Fall Meeting. December 18, 2015. San Francisco.
- 2015 **Dietrich, J.T.**, J. Duffin. High-resolution 3D topographic and bathymetric mapping for small streams using low-altitude aerial photography (Poster). Association of American Geographers Annual Meeting. April 23, 2015. Chicago.
- 2015 **Dietrich, J.T.**, J. Duffin. Extracting high-resolution shallow river bathymetry with Structure-from-Motion (Oral). 2nd Multibeam EchoSounder (MBES) in Rivers Workshop. March 25, 2015. Flagstaff, AZ.
- 2014 **Dietrich, J.T.** Mapping the Riverscape of the Middle Fork John Day River with Structure-from-Motion (Oral - H51S-06). American Geophysical Union, Fall Meeting. December 19, 2014. San Francisco.
- 2014 **Dietrich, J.T.** Sub-Meter Remote Sensing for Fluvial Monitoring with Off-the-shelf Components (Poster). Association of American Geographers Annual Meeting. April 8, 2014. Tampa, FL. & 5th Annual Bretz Club Conference. April 11, 2014. Portland, OR.
- 2013 **Dietrich, J.T.** 4D Monitoring of a River Restoration Project with Structure-from-Motion (Poster - EP43C-0865). American Geophysical Union, Fall Meeting. December 12, 2013. San Francisco.

- 2013 **Dietrich, J.T.**, P. Lind. The Use of Structure-for-Motion for Repeat Topographic Surveys of Active Boulder Bars on a Hydrologically Dynamic Tropical River (Poster, Presented by P Lind). International Conference on Geomorphology. August 27-31, 2013. Paris.
- 2013 **Dietrich, J.T.** Three-Dimensional Field Mapping of the Granite Boulder Creek Restoration Project, Oregon - Update (Poster). 4th Annual Bretz Club Conference. April 26, 2013. Charleston, OR.
- 2012 **Dietrich, J.T.** Mapping Land and Water Surface Topography with Instantaneous Structure-from-Motion (Oral - EP43C-0865). American Geophysical Union, Fall Meeting. December 5, 2012. San Francisco.
- 2012 **Dietrich, J.T.** Three-Dimensional Field Mapping of the Granite Boulder Creek Restoration Project, Oregon (Poster). Binghamton Geomorphology Symposium. September 21-23, 2012. Jackson, WY.
- 2012 **Dietrich, J.T.** Low-Cost River Restoration Monitoring with Structure-from-Motion (Oral). Middle Fork John Day River Intensely Monitored Watershed Fall Meeting. September 19, 2012. John Day, OR.
- 2012 **Dietrich, J.T.** Measurement of Fluvial Wood Volumes Using Structure-from-Motion 3D Models (Oral). Association of American Geographers Annual Meeting. February 27, 2012. New York.
- 2011 **Dietrich, J.T.**, M.A. Fonstad, B.C. Courville, J.L. Jensen. High Resolution, Automated, Low-Cost Topographic Mapping with Microsoft Photosynth (Oral). Association of American Geographers Annual Meeting. April 12, 2011. Seattle.
- 2010 **Dietrich, J.T.** Visualizing Small-Scale Geomorphic Features Using 3D Models Derived from Microsoft Photosynth (Poster). Binghamton Geomorphology Symposium. October 16-17, 2010. Columbia, SC.
- 2008 **Dietrich, J.T.** A New Technique Combining Remote Sensing and GIS Tools to Analyze Repeat Photography from Glacier National Park, Montana (Poster). Association of American Geographers Annual Meeting. April 17, 2008, Boston.
- 2008 **Dietrich, J.T.** Quantitative Assessment of Landscape Change Using Georeferenced Repeat Photography in Glacier National Park, Montana, USA (Oral). Texas Geography Student Research Symposium. April 4, 2008. San Marcos, TX.
- 2007 **Dietrich, J.T.** Change Detection of Complex Patterns at Alpine Treeline in Glacier National Park: A Comparison of Methods Using Repeat Photography (Poster). Binghamton Geomorphology Symposium. October 6-7, 2007. Durham, NC.
- 2007 **Dietrich, J.T.**, D.R. Butler. 360° Panoramic Repeat Photography System for Landscape Change Detection in Glacier National Park, Montana (Poster). Association of American Geographers Annual Meeting. April 19, 2007. San Francisco.

- 2006 **Dietrich, J.T.** Beach Erosion and Storm Protection: Is Beach Nourishment the Answer for the Outer Banks of North Carolina (Poster). Association of American Geographers Annual Meeting. March 10, 2006. Chicago.

Co-authored Presentations

- 2021 M.A. Fonstad, **J.T. Dietrich**, A. Zettler-Man, D. Webster. Riverseer: An open-source approach to high-resolution mapping and monitoring of river environments. American Association of Geographers Annual Meeting. April 8, 2021. Online.
- 2020 A. Zettler-Mann, **J.T. Dietrich**, M.A. Fonstad. Community Driven Riverscape Mapping (Poster). River Restoration Northwest, February 5, 2020. Stevenson, WA.
- 2019 Magilligan, F.J., K. Nislow, **J.T. Dietrich**. Transient versus sustained biophysical responses to dam removal (Oral, presented by FJ Magilligan). American Association of Geographers Annual Meeting. April 6, 2019. Washington, D.C.
- 2019 A.S. Woodget, **J.T. Dietrich**, R.T. Wilson. Bathymetric UAS-SfM change detection: The implications of refraction correction, water surface elevations and spatially variable error. (Poster - GM2.2-2297, presented by AS Woodget) European Geophysical Union General Assembly, April 9, 2019. Vienna.
- 2019 Carbonneau, P.E., T.P. Breckon, **J.T. Dietrich**, S.J. Dugdale, M.A. Fonstad, H. Miyamoto, A.S. Woodget. Generalized classification of hyperspatial resolution airborne imagery of fluvial scenes with deep convolutional neural networks. (Poster - ESS12.10-1865, presented by PE Carbonneau) European Geophysical Union General Assembly, April 9, 2019. Vienna.
- 2018 Devlin-McLoughlin, V.E., **J.T. Dietrich**. Creation of Pixel and Point Based Suspended Sediment Hyperspectral Spectral Libraries (Poster - EP31C-2363, presented by VE Devlin-McLoughlin). American Geophysical Union, Fall Meeting. December 12, 2018. Washington, D.C.
- 2018 Woodget, A.S., **J.T. Dietrich**, and C.L. Fyffe. Quantifying Submerged Fluvial Topographic Change and Grain Size Change at Hyperspatial Resolutions Using UAS and SFM. 6th Small Unmanned Aerial Systems for Environmental Research (UAS4Enviro) (Poster, presented by AS Woodget). Split, Croatia. June 27-29, 2018
- 2018 Heindel, R.C., J.W. Chipman, L.E. Culler, **J.T. Dietrich**, F.C. Governali, A.M. Spickard, R.A. Virginia. New Perspectives on Aeolian Landscape Change in the Kangerlussuaq Region, West Greenland (Oral, presented by RC Heindel). 48th International Arctic Workshop 2018. April 5-6, 2018. Boulder, CO
- 2017 Fonstad, M.A., J.H. Major, J.E. O'Connor, **J.T. Dietrich**. Reconstructing the 1935 Columbia River Gorge: A Topographic and Orthophoto Experiment (Poster - EP34B-05, presented by MA Fonstad). American Geophysical Union, Fall Meeting. December 13, 2017. New Orleans.
- 2016 Carbonneau, P.E., **J.T. Dietrich**. Cost-Effective Non-Metric Photogrammetry from Consumer-Grade sUAS (Oral, presented by PE Carbonneau). Small Unmanned Aerial

- Systems for Environmental Research Conference. June 28, 2016. University of Worcester, Worcester, UK.
- 2015 Magilligan, F.J., K. Nislow, H. Doyle, B. Kynard, **J.T. Dietrich**. Long-term Monitoring of Ecological and Geomorphic Adjustments to Dam Removal in an Upland Mesic Catchment (Oral - EP32A-06, presented by FJ Magilligan). American Geophysical Union, Fall Meeting. December 16, 2015. San Francisco.
- 2014 Fonstad, M.A., **J.T. Dietrich**. Structure from Motion vs. the Kinect: Comparisons of River Field Measurements at the 10^{-2} to 10^2 meter Scales (Poster - H43H-1055, presented by MA Fonstad). American Geophysical Union, Fall Meeting. December 18, 2014. San Francisco.
- 2014 H.R. Dietterich, K.V. Cashman, A. Rust, E. Lev, and **J.T. Dietrich**. Lava Flow Interactions with Topographic Obstacles: Morphologic Analysis, Analogue Modeling, and Molten Basalt Experiments (Poster - V13C-4794, presented by HR Dietterich). American Geophysical Union, Fall Meeting. December 15, 2014. San Francisco.
- 2013 Beeson, H.W., **J.T. Dietrich**. Mapping and Predicting Landscape Morphology and Erosion Rates in Badlands: Painted Hills, Oregon, USA (Poster, presented by HW Beeson). Association of American Geographers Annual Meeting. April 12, 2013. Los Angeles.
- 2012 Fonstad, M.A., **J.T. Dietrich**. Utility of Close-Range Remote Sensing Techniques for Mapping Topography and Bathymetry in Small Streams (Poster - H31E-1171, presented by MA Fonstad). American Geophysical Union Fall Meeting. December 5, 2012. San Francisco.
- 2012 Fonstad, M.A., **J.T. Dietrich**. Geomorphology, Photography and Three-Dimensional Mapping using Structure-from-Motion (Poster, presented by MA Fonstad). Binghamton Geomorphology Symposium. September 21-23, 2012. Jackson, WY.
- 2011 Fonstad, M.A., **J.T. Dietrich**, B.C. Courville, J.L. Jensen, P.E. Carbonneau. Topographic Structure-from-Motion (Oral - H53O-05, presented by MA Fonstad). American Geophysical Union Fall Meeting. December 9, 2011, San Francisco.
- 2011 Fonstad, M.A., **J.T. Dietrich**, B.C. Courville, J.L. Jensen, P.E. Carbonneau. High Resolution, Low-Cost 3D Riverscape Mapping Using Field Photography (Oral, presented by MA Fonstad). American Fisheries Society 141st Annual Meeting. September 7, 2011, Seattle.
- 2010 Fonstad, M.A., **J.T. Dietrich**, B.C. Courville, J.L. Jensen. Lighter-Than-Air Blimps as Testbeds for River Remote Sensing Techniques (Poster - H43G-1336, presented by MA Fonstad). American Geophysical Union Fall Meeting. December 16, 2010. San Francisco.

SERVICE

Professional Service

Proposal Review

2019 NSF Earth Sciences Division, Geoinformatics

2016 NSF Earth Sciences Division, Tectonics

- 2015 European Facility for Airborne Research (EUFAR)
- 2014 EAR Postdoctoral Fellowship Proposal Reviewer, National Science Foundation
- 2013 Book Proposal Reviewer, Wiley-Blackwell

Manuscript Review

- 2021 Annals of the American Association of Geographers
- 2020 International Journal of Remote Sensing
Earth Surface Processes and Landforms
Geomorphology
- 2019 International Journal of Remote Sensing
River Research and Applications
Ecological Informatics
WIREs Water
- 2018 Earth Surface Processes and Landforms
Remote Sensing
Annals of the American Association of Geographers
Remote Sensing of Environment
Water Resources Research
- 2017 Geomorphology
International Journal of Remote Sensing
Annals of the American Association of Geographers
Remote Sensing
Progress in Physical Geography
- 2016 Earth Surface Processes and Landforms
Journal of Geophysical Research (JGR)-Biosciences
ISPRS International Journal of Geo-Information
- 2015 Progress in Physical Geography
Earth Surface Processes and Landforms
Geomorphology
The Photogrammetric Record
- 2014 The Photogrammetric Record
Earth Surface Processes and Landforms
- 2013 Applied Geography Conference

Conference Sessions Organized

- 2019 River Observations, Monitoring, and Management (co-organizer)
Association of American Geographers Annual Meeting. April 2019. Washington, D.C.
- 2018 River Observations, Monitoring, and Management (co-organizer)
Association of American Geographers Annual Meeting. April 2018. New Orleans.
- 2017 Remote Sensing of Rivers: Observations Across Scales (Lead organizer). Oral and Poster sessions, EP034-I & EP034-II.
American Geophysical Union Fall Meeting. December 2017. New Orleans.
- 2017 a) Applications of high-resolution spatial data in geomorphology and biogeography, 4 sessions (organizer)
b) Water Body Observations, Monitoring, and Management (co-organizer)

Association of American Geographers Annual Meeting. April 2017. Boston.

- 2016 a) Water Body Observations, Monitoring, and Management (co-organizer)
 b) Applications of high-resolution spatial data in geomorphology and
 biogeography (co-organizer)
 Association of American Geographers Annual Meeting. March 2016. San Francisco.

- 2015 Remote Sensing of Rivers: Advancing Fluvial Science (H092, co-organizer). American
 Geophysical Union Fall Meeting. December 2015. San Francisco.

- 2012 Morphological Measurement using Close Range Photogrammetry and Laser Scanning, in
 Cooperation with ISPRS Working Group V/6 (organizer). Association of American
 Geographers Annual Meeting. February 2012. New York.

Other Professional Service

Middle Fork John Day Intensely Monitored Watershed Working Group (2012 – 2014)

Department/University Service

University of Northern Iowa

Geography Graduate Program Coordinator (2018 – Present)
 University Unmanned Aerial Systems Committee, **Chair** (2018 – Present)
 Iowa Low-altitude Remote Sensing Lab (I-LARS), **Director** (2017 – Present)
 Geography Curriculum Committee, **Chair** (2017 – Present)
 Geography Library Committee (2017 – Present)
 Geography Promotion/Recruitment/Website Committee (2017 – Present)
 College of Social and Behavioral Science Fulbright Committee (2017 – Present)
 College of Social and Behavioral Science SPARK (recruitment) (2017 – Present)
 Graduate College – Thesis/Dissertation Template Development (2017)

Dartmouth College

Proposal Reviewer, Provost's Office Seed Funding Program (2015)

University of Oregon

Graduate Representative, Geography Faculty Search Committee (2014)
 Graduate Representative to the Faculty, Department of Geography (2013 – 2014)
 Graduate Representative, Geography Colloquium Committee (2012 – 2014)

University of Kansas

Undergraduate Representative, Dept. of Geography Advisory Board (2005 – 2006)
 Undergraduate Representative to the Faculty, Dept. of Geography (2004 – 2006)
 Undergraduate Representative, Geography Technology Committee (2004 – 2006)

Conference and Workshop Organization

- 2018 Thesis and Dissertation Formatting: Streamlining Your Writing Process.
 (Organizer/Presenter)
 University of Northern Iowa - Graduate College Workshop, October 3, 2018

- 2017 Thesis and Dissertation Formatting and Reference Managers: Streamlining Your Writing Process. (Organizer/Presenter)
University of Northern Iowa - Graduate College Workshop, December 4, 2017
- 2017 EnviroDrones (Organizer)
Dartmouth College, June 3-4, Hanover, NH.
- 2015 Structure-from-Motion for the Geosciences (Co-organizer)
Durham University, September 17-18, Durham, UK.
- 2014 Developing your CV for Academic Jobs (Organizer)
Geography Graduate Student Workshop, April 15, 2014, Eugene, OR.
- 2013 Preparing a Conference Poster Presentation (Organizer)
Geography Graduate Student Workshop, March 8, 2013, Eugene, OR.
- 2012 Remote Sensing as a Research Tool in Geography (Organizer)
University of Oregon Simulating Human-Environment Dynamics Laboratory Workshop, November 2, 2012. Eugene, OR.
- 2012 Optimizing your Curriculum Vitae (Panelist)
Association of American Geographers Annual Meeting, February 27, 2012. New York.
- 2012 LiDAR Processing with Fusion (Organizer)
University of Oregon River Research Group, January 18 & 25, 2011. Eugene, OR.
- 2011 Introduction to Structure-from-Motion Mapping Techniques (Organizer)
University of Oregon River Research Group, October 21 & 28, 2011. Eugene, OR

Volunteer/Outreach Work

- 2020 Cedar Valley Makers, a community workshop and STEM outreach 501(c)(3) organization
- Vice-President (May 2018 – Jan 2019)
 - Treasurer (Jan 2019 – Sept 2020)
 - President (Sept 2020 – Present)
- 2017 Cedar Valley FIRST Lego League Jr. Advisor – 2017 Hydrodynamics Challenge
- 2016 Vermont Institute of Natural Science (Nature and Raptor Center) – Aerial imagery and videos for education and promotion
- 2015 Washington State, Department of Fish and Wildlife – Stream culvert monitoring with Structure-from-Motion
- 2014 City of Lebanon, New Hampshire – LiDAR acquisition requirements
- 2014 Take Our Daughters and Sons to Work Day presentation “Innovations in Mapping and Spatial Technology”, University of Oregon (Apr. 2014)

2013 Scholars Recognition Day Geography Breakout
Office of Admissions, University of Oregon (Jan. 2013)

2012 Geography Awareness Week Committee, University of Oregon (2012 – 2014)

Student Organization Leadership

University of Oregon

President, ASPRS Student Chapter (2013 – 2014)

Vice President, ASPRS Student Chapter (2012 – 2013)

Coordinator, River Research Group (2012 – 2014)

Texas State University-San Marcos

Masters Representative, Geography Graduate Student Forum (2007 – 2008)

President, Society for Geographic Information Science (2007 – 2008)

Vice President, Society for Geographic Information Science (2006 – 2007)

University of Kansas

President; Geography Club Student Organization (2003 – 2006)

PROFESSIONAL ORGANIZATION MEMBERSHIP

Association of American Geographers (AAG)

Specialty Groups: Geomorphology, Water Resources, GIScience, Remote Sensing

American Geophysical Union (AGU)

European Geosciences Union (EGU)

American Society for Photogrammetry and Remote Sensing (ASPRS)

International Society for Photogrammetry and Remote Sensing (ISPRS)

SKILLS

Advanced ArcGIS

Remote Sensing:

- ENVI
- ERDAS Imagine
- FUSION Lidar

RTK GPS/Total Station Surveying

Close-range Photogrammetry

Terrestrial Laser Scanning

Field Research Methods

Computer Programming:

- Python
- MATLAB
- Arduino

Small UAS Piloting

- Multi-rotor and fixed-wing

Open-source electronics

REFERENCES

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