Jacob A. Morgan

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Civil & Environmental Engineering
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Education

- **PhD Civil Engineering** — Colorado State University
  Hydraulic Engineering, Stream Restoration, & River Mechanics — *2018*
- **MS Civil Engineering** — University of Missouri–Kansas City
  Environmental Water & River Mechanics — *2013*
- **BS Civil Engineering** — Tennessee Technological University
  Environmental & Water Resources Engineering — *2011*

Experience

- **Postdoctoral Research Associate** — University of Washington
  Civil & Environmental Engineering — *Apr 2018 – Present*
- **Graduate Research Assistant** — Colorado State University
  Civil & Environmental Engineering — *Aug 2013 – Feb 2018*
- **Geotechnical Technician** — Olsson Associates
  Geotechnical Investigation and Construction Services — *Sep 2011 – Jun 2013*

Publications

Peer-Reviewed

3. Nelson, P.A. and **J.A. Morgan**, 2018, Flume experiments on flow and sediment supply controls on gravel bedform dynamics, *Geomorphology* 323: 98–105, doi: 10.1016/j.geomorph.2018.09.011.
2. **Morgan, J.A.**, D.J. Brogan, and P.A. Nelson, 2017, Application of Structure-from-Motion photogrammetry in laboratory flumes, *Geomorphology* 276: 125–143, doi: 10.1016/j.geomorph.2016.10.021.
1. Nelson, P.A., A.K. Brew, and **J.A. Morgan**, 2015, Morphodynamic response of a variable-width channel to changes in sediment supply, *Water Resources Research* 51(7): 5717–5734, doi: 10.1002/2014WR016806.

Conference Proceedings

2. **Morgan, J.A.** and P.A. Nelson, 2016, Hydro- and morphodynamics of riffle-pool sequences in the middle Elwha River, Washington, USA, in Constantinescu, Garcia, and Hanes (eds.), *River Flow 2016*, Taylor & Francis Group, London: 1212–1217, doi: 10.1201/9781315644479-191.
1. Brew, A.K., **J.A. Morgan**, and P.A. Nelson, 2015, Bankfull width controls on riffle-pool morphology under conditions of increased sediment supply: Field observations during the Elwha River dam removal project, *SEDHYD 2015: 10th Federal Interagency Sedimentation Conference and 5th Federal Interagency Hydrologic Modeling Conference*, Reno, Nev., 19–23 Apr., https://acwi.gov/sos/pubs/3rdJFIC/Contents/9B-Brew.pdf.

Theses

2. **Morgan, J.A.**, 2018, The effects of sediment supply, width variations, and unsteady flow on riffle-pool dynamics, PhD Dissertation, Colorado State University, 189 p., https://hdl.handle.net/10217/189320.

1. **Morgan, J.A.**, 2013, Bed degradation of the lower Missouri River, MS Thesis, University of Missouri–Kansas City, 172 p., http://hdl.handle.net/10355/35492.

Abstracts and Presentations

17. **Morgan, J.A.**, N. Kumar, A.R. Horner-Devine, C. Bandaragoda, and E. Istanbulluoglu, 2018, Long-term morphodynamic modeling of a coarse-grained sediment wave, poster presented at *2018 AGU Fall Meeting*, Washington, D.C., 10–14 Dec.
16. Istanbulluoglu, E., A.R. Horner-Devine, C. Bandaragoda, A. Pfeiffer, **J.A. Morgan**, J. Keck, G.S. Mauger, B.D. Collins, D.E. Shean, N. Kumar, J. Lundquist, S.W. Anderson, K.L. Jaeger, E. Grossman, E. Whorton, D. Montgomery, and J.L Riedel, 2018, Integrated modeling of hydro-geomorphic hazards: floods, landslides and sediment, presented at *2018 AGU Fall Meeting*, Washington, D.C., 10–14 Dec.
15. **Morgan, J.A.**, P.A. Nelson, and D.J. Brogan, 2017, Hydro-geomorphology of the middle Elwha River, Washington, following dam removal, presented at *2017 AGU Fall Meeting*, New Orleans, Louis., 11–15 Dec.
14. Nelson, P.A. and **J.A. Morgan**, 2017, Flow, sediment supply, and channel width controls on gravel bedform dynamics, poster presented at *2017 AGU Fall Meeting*, New Orleans, Louis., 11–15 Dec.
13. Brogan, D.J., P.A. Nelson, L.H. MacDonald, and **J.A. Morgan**, 2017, Geomorphic complexity of sequential fire and floods in mountain watersheds, presented at *2017 AGU Fall Meeting*, New Orleans, Louis., 11–15 Dec.
12. **Morgan, J.A.** and P.A. Nelson, 2017, Two-dimensional modeling of variable-width gravel bed morphodynamics, poster presented at *CSDMS Annual Meeting: Modeling Coupled Earth and Human Systems - The Dynamic Duo*, University of Colorado, Boulder, Colo., 23–25 May.
11. Brogan, D.J., P.A. Nelson, L.H. MacDonald, and **J.A. Morgan**, 2017, How disturbing: The complications of sequential fire and floods in mountain catchments, presented at *AGU Hydrology Days 2017*, Colorado State University, Fort Collins, Colo., 20–22 Mar., http://hydrologydays.colostate.edu/Abstracts_17/Brogan_abs.pdf.
10. **Morgan, J.A.**, P.A. Nelson, and D.J. Brogan, 2017, Morphological changes in the middle Elwha River, Washington following dam removal, presented at *AGU Hydrology Days 2017*, University, Fort Collins, Colo., 20–22 Mar., http://hydrologydays.colostate.edu/Abstracts_17/Morgan_abs.pdf.
9. Schoelkopf, A., **J.A. Morgan**, and P.A. Nelson, 2017, Bedload sheet characteristics under steady versus unsteady flow, presented at *AGU Hydrology Days 2017*, Fort Collins, Colo., 20–22 Mar., http://hydrologydays.colostate.edu/Abstracts_17/Schoelkopf_abs.pdf.
8. **Morgan, J.A.** and P.A. Nelson, 2016, Numerical and physical experiments on the effect of variations in channel width on gravel-bed river morphodynamics, poster presented at *2016 AGU Fall Meeting*, San Francisco, Calif., 12–16 Dec.
7. **Morgan, J.A.** and P.A. Nelson, 2016, Numerical simulations on the effect of variations in channel width on the morphodynamics of gravel-bed rivers, presented at *2016 GSA Annual Meeting*, Denver, Colo., 25–28 Sept.
6. **Morgan, J.A.** and P.A. Nelson, 2016, Morphodynamics of riffle-pool sequences in the middle Elwha River, Washington, presented at *AGU Hydrology Days 2016*, Colorado State University, Fort Collins, Colo., 21–23 Mar., http://hydrologydays.colostate.edu/Abstracts_16/Morgan_abs.pdf.
5. **Morgan, J.A.** and P.A. Nelson, 2015, Numerical experiments on sediment pulse dynamics, presented at *2015 AGU Fall Meeting*, San Francisco, Calif., 14–18 Dec.
4. **Morgan, J.A.** and P.A. Nelson, 2015, Geomorphic changes in riffle-pool sequences of the middle Elwha River, poster presented at *2015 Elwha River Science Symposium*, NatureBridge, Port Angeles, Wash., 18–20 Nov.

3. Nelson, P.A. and **J.A. Morgan**, 2015, Numerical experiments on the effects of channel width, unsteady flow, and sediment supply on gravel-bed river morphodynamics, poster presented at *Gravel Bed Rivers 8*, Kyoto, Japan, 14–18 Sept.
2. **Morgan, J.A.** and P.A. Nelson, 2015, Numerical experiments on the effects of channel width, unsteady flow, and sediment supply on gravel-bed river morphodynamics, presented at *AGU Hydrology Days 2015*, Colorado State University, Fort Collins, Colo., 23–25 Mar., http://hydrologydays.colostate.edu/Abstracts_15/Morgan_abs.pdf.
1. Brew, A.K., **J.A. Morgan**, and P.A. Nelson, 2014, Analysis of variations in channel width and sediment supply on riffle-pool dynamics, before and after dam removal, presented at *AGU Hydrology Days 2014*, Colorado State University, Fort Collins, Colo., 24–26 Mar., http://hydrologydays.colostate.edu/Abstracts_14/Brew_abs.pdf.

Other

1. **Morgan, J.A.** and D.J. Brogan, 2016, *How to VisualSFM*, Department of Civil and Environmental Engineering, Colorado State University, 21 p., doi: 10.5281/zenodo.1256885.

Invited Lectures

- **University of Washington**:
  - CEWA 599 Field Measurements (Winter 2019)
  - CEE 474 Hydraulics of Sediment Transport (Spring 2018)
- **Colorado State University**:
  - WR 417 Watershed Measurments (Fall 2015, Fall 2017)
  - CIVE 521 Hydrometry (Spring 2016)

Technical Skills

- **Programming**: Proficient with: Matlab, Fortran90, Python. Basic ability with: LaTeX, HTML/CSS, Visual Basic
- **Hydro-morphodynamic models**: iRIC (Nays2DH, FaSTMECH), Delft3D, HEC-RAS.
- **Topographic surveying**: RTK-GNSS (Topcon GR-5/Tesla), Structure-from-Motion (Agisoft PhotoScan, VisualSFM), terrestrial lidar (Leica ScanStation HDS3600, Faro Focus3DS), total station, automatic level.
- **Laboratory instruments**: Massa mPulse sensors, Seatek Ultrasonic ranging system, Nortek Vectrino Profiler.
- **Miscellaneous software**: ArcGIS, QGIS, CloudCompare, gnuplot, Minitab.

Certifications

- **Engineering Intern** — May 2011
  Tennessee State Board of Architectural and Engineering Examiners — *Licence 29181*

Affiliations

- **American Geophysical Union**: Earth and Planetary Surface Processes Focus Group
- **American Society of Civil Engineers**: Environmental and Water Resources Institute
- **Geological Society of America**: Quaternary Geology and Geomorphology Division
- **Community Surface Dynamics Modeling System**: Terrestrial Working Group

Service

- Article reviewer for *Geomorphology* and *Earth Surface Dynamics*
- Instructor for high school students about field and/or laboratory methods in river science:
  - ENvision-Campos EPC week (June 2016)
  - CSU Native American STEM Institute (June 2016)
  - CSU Alliance River Science STEM Institute (June 2016, June 2017)