

# John B. Shaw

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## **Education**

- Ph. D. 2013 Geosciences, University of Texas at Austin, Austin, TX  
Dissertation: "The Kinematics of Distributary Channels on the Wax Lake Delta, Coastal Louisiana, USA"  
Advised by David Mohrig
- B.A. 2007 Geology and Applied Mathematics, Oberlin College, Oberlin, OH

## **Professional Experience**

- 2019- Associate Professor, Dept. of Geosciences, University of Arkansas, Fayetteville  
2014-2019 Assistant Professor, Dept. of Geosciences, University of Arkansas, Fayetteville  
2013-2016 NSF post-doctoral fellow, University of Wyoming  
2008-2013 Research and Teaching Assistant, University of Texas at Austin  
2006-2008 Research Associate, Saint Anthony Falls Laboratory, University of Minnesota  
2007 Sediment Laboratory Technician, Minnesota Geological Survey, Minneapolis, MN

## **Research Interests**

The morphodynamics and evolution of modern and ancient constructional landscapes; coastal sustainability; the effects of hurricanes on sandy coastlines; direct measurement and remote sensing of shallow coastal landforms

## **Awards and Honors**

- Sigma Gamma Epsilon (Student Geology Society) Professor of the Year, 2016, 2018  
PRF New Investigator Award, 2017-2019  
DOE Early Career Research Award, 2016-2021  
NSF Post-Doctoral Fellowship, 2013-2016  
AGU Best Student Paper Award, 2011  
SEPM Research Grant, 2011  
Chevron Award, UT-Austin, 2011  
DeFord Field Scholarship, UT-Austin 2010, 2011  
BP Entrance Fellowship to UT Austin, 2008

## **Publications**

(served as research mentor for underlined names)

### **In Progress**

Sanks, K.M., **J.B. Shaw**, K.J. Naithani, (*in review*), Field-Based Estimate of the Sediment Deficit in Louisiana, *Science Advances*, EarthArxiv: <https://osf.io/vp5j7/>

Whaling, A.R., **J.B. Shaw**, (*in revision*), Changes to Subaqueous Delta Bathymetry Following a High River Flow Event, Wax Lake Delta, USA, *Estuaries and Coasts*, EarthArxiv: <https://osf.io/urcyv/>

Mahon, R.C., **J.B. Shaw**, (*in revision*). A faithful record of channel mouth bifurcation angles in river delta stratigraphy on Earth and Mars. *Geology*, EarthArxiv: <https://doi.org/10.17605/OSF.IO/9R64A>

### **Published**

Ke, W.-T., **J. B. Shaw**, Mahon, R. C., & Cathcart, C. A. (2019). Distributary Channel Networks as Moving Boundaries: Causes and Morphodynamic Effects. *Journal of Geophysical Research: Earth Surface*, 2019JF005084. <https://doi.org/10.1029/2019JF005084>,  
**EarthArxiv**: <https://doi.org/10.17605/OSF.IO/NGXF3>

**Shaw, J. B.**, Estep, J. D., Whaling, A. R., Sanks, K. M., & Edmonds, D. A. (2018). Measuring subaqueous progradation of the Wax Lake Delta with a model of flow direction divergence. *Earth Surface Dynamics*, 6(4), 1155–1168. <https://doi.org/10.5194/esurf-6-1155-2018>

Ayoub, F., Jones, C. E., Lamb, M. P., Holt, B., **Shaw, J. B.**, Mohrig, D., & Wagner, W. (2018). Inferring surface currents within submerged, vegetated deltaic islands and wetlands from multi-pass airborne SAR. *Remote Sensing of Environment*, 212, 148–160.  
<https://doi.org/10.1016/j.rse.2018.04.035>

**Shaw, J. B.**, Miller, K. and McElroy, B. (2018). Island Formation Resulting from Radially Symmetric Flow Expansion, *J. Geophys. Res. Earth Surf.*, 2017JF004464, doi:10.1002/2017JF004464.

Coffey, T. S., & **J. B. Shaw**. (2017). Congruent Bifurcation Angles in River Delta and Tributary Channel Networks. *Geophysical Research Letters*, 2017GL074873.  
<https://doi.org/10.1002/2017GL074873>

Wagner, R. W., D. Lague, D. Mohrig, P. Passalacqua, **J. Shaw**, and K. Moffett (2017), Elevation Change and Stability on a Prograding Delta, *Geophys. Res. Lett.*, 2016GL072070,  
doi:10.1002/2016GL072070.

**Shaw, J. B.**, B. McElroy (2016), Backwater number scaling of alluvial bed forms, *J. Geophys. Res. Earth Surf.*, 2016JF003861, doi:10.1002/2016JF003861.

**Shaw, J. B.**, F. Ayoub, C. E. Jones, M. P. Lamb, B. Holt, R. W. Wagner, T.S. Coffey, J. A. Chadwick, and D. Mohrig (2016), Airborne Radar Imaging of Subaqueous Channel Evolution in Wax Lake Delta, Louisiana, USA, *Geophys. Res. Lett.*, 2016GL068770, doi:10.1002/2016GL068770.

**Shaw, J. B.**, D. Mohrig, and R. W. Wagner (2016), Flow patterns and morphology of a prograding river delta, *J. Geophys. Res. Earth Surf.*, 2015JF003570, doi:10.1002/2015JF003570.

Mahon, R. C., **J. B. Shaw**, K. R. Barnhart, D. E. J. Hopley, and B. McElroy (2015), Quantifying the stratigraphic completeness of delta shoreline trajectories, *J. Geophys. Res. Earth Surf.*, 2014JF003298, doi:10.1002/2014JF003298.

- Shaw, J. B.**, Y. You, D. Mohrig, and G. Kocurek (2015), Tracking hurricane-generated storm surge with washover fan stratigraphy, *Geology*, 43(2), 127–130, doi:10.1130/G36460.1.
- Shaw, J.B.**, D. Mohrig, (2014), The importance of erosion in distributary channel network growth, Wax Lake Delta, Louisiana, USA, *Geology*, 42, 31-34, doi: 10.1130/G34751.1
- Shaw, J. B.**, D. Mohrig, and S. K. Whitman (2013), The Morphology and Evolution of Channels on the Wax Lake Delta, *J. Geophys. Res.*, 118, 1–22, doi:10.1002/jgrf.20123.
- Nittrouer, J. A., **J. Shaw**, M. P. Lamb, and D. Mohrig (2012), Spatial and temporal trends for water-flow velocity and bed-material transport in the lower Mississippi River, *Geol Soc Am Bull*, 124, 400–414, doi:10.1130/B30497.1.
- Lamb, M. P., J. A. Nittrouer, D. Mohrig, and **J. Shaw** (2012), Backwater and river plume controls on scour upstream of river mouths: Implications for fluvio-deltaic morphodynamics, *J. Geophys. Res.*, 117(F1), F01002, doi:10.1029/2011JF002079.
- Edmonds, D. A., **J. B. Shaw**, and D. Mohrig (2011), Topset-dominated deltas: A new model for river delta stratigraphy, *Geology*, 39(12), 1175–1178, doi:10.1130/G32358.1.
- Viparelli, E., **J. Shaw**, A. Bevington, E. Meselhe, G. Holm, D. Mohrig, R. Twilley, and G. Parker (2011), Inundation Model As an Aid for Predicting Ecological Succession on Newly-Created Deltaic Land Associated with Mississippi River Diversions: Application to the Wax Lake Delta, in *World Environmental and Water Resources Congress 2011*, pp. 2340–2349, American Society of Civil Engineers.
- Lamb, M. P., B. McElroy, B. Kopriva, **J. Shaw**, and D. Mohrig (2010), Linking river-flood dynamics to hyperpycnal-plume deposits: Experiments, theory, and geological implications, *Geol. Soc. Am. Bull.*, 122(9-10), 1389–1400.
- Shaw, J. B.**, M. A. Wolinsky, C. Paola, and V. R. Voller (2008), An image-based method for shoreline mapping on complex coasts, *Geophys Res Lett*, 35, L12405.

### **Repositories**

- Ke, W.-T., Shaw, J.B., (2018). MB\_DCN Model, Figshare. Fileset.  
<https://doi.org/10.6084/m9.figshare.7272422.v1>
- Shaw, J. B. and A.M. Haynes (2018). Streakline analysis of the Wax Lake Delta, 1974 - 2016.  
<https://doi.org/10.6084/m9.figshare.7075181.v1>

### **Non peer-reviewed articles**

- “What do River Deltas and Bacteria have in common? The way that they branch.” (2019), medium.com, <https://tinyurl.com/y48sbt9w>
- “Measuring the Growth of River Deltas under Muddy Water” (2018), medium.com, <https://bit.ly/2GAs0rF>
- “A Recipe for Island Creation” (2018), medium.com, <https://bit.ly/2LwBB1f>
- “Branching Angles of river channels are similar, whether they join or split” (2017), medium.com, <https://bit.ly/2ieuMbz>

## **Grants Funded**

- 2019-2021:** Chancellor's Fund for Innovation and Collaboration, "A Seed Grant Linking Transportation Economics to Geology on the Lower Arkansas River," \$118,250, PI
- 2019-2022:** National Science Foundation, GLD 1848993/4, "Collaborative research: An Experimental Investigation of Morphodynamic Coupling between River Deltas and Marshes," with Dr. Kyle Straub, Tulane University, \$279,136 to U. Arkansas, co-PI.
- 2016-2021:** Department of Energy Early Career Research Award, "The Dynamics and stratigraphy of distributary channel networks," \$753,000, PI
- 2017-2020:** American Chemical Society, Petroleum Research Fund, Doctoral New Investigator Award, "Investigating advective and diffusive controls on fine-grained sediment transport and deposition," \$110,000, PI
- 2017-2018:** National Center for Earth Surface Dynamics Post-doctoral Fellowship award (Post-doc Dr. Robert Mahon), \$50,000, co-PI
- 2013-2016:** National Science Foundation, Post-doctoral Fellowship, "Backwater control on the morphodynamics of delta growth," \$170,000, PI.

## **Courses Taught**

- GEOS 4223: *Stratigraphy and Sedimentation*, Fall 2014-2019
- GEOS 3413: *Sedimentary Rocks and Fossils*, Spring 2016-2018
- GEOS 560V: *Dynamics of Sediment Transport*, Fall 2015, Fall 2017, Fall 2019
- GEOS 436V: *Spring Break Field Course to the Florida Pan-handle*, Spring 2016 (with Dr. Covington)
- GEOS 4686: *Field Camp* Summer 2017, 2018
- GEOS 5612: *Research Methods* Spring 2020

## **Selected Professional Service**

- Field Trip Leader, National Association of Black Geoscientists Technical Conference (2019)
- Participant, Fort Valley State University's CDEP Mathematics, Science, and Engineering Academy (2019)
- SEPM Council Nominating Committee (2019)
- Departmental Search Committee Chair – Hydrology Hire (2019-2020)
- Ph.D. Coordinator, Department of Geosciences (2017-present)
- Departmental Search Committee – Geography Hire (2018-2019)
- Faculty convener, Geohog Research Conference (2017, 2018)
- Early-Career Grant Workshop Panelist, U. of Arkansas (2017-2019)
- Departmental Scholarship Committee (2017)
- Departmental Search Committee Chair – Stratigraphy Hire (2016-2017)
- Departmental Curriculum Committee (2016-2017)
- Departmental T.A. Committee (2016-2017)
- Convener for 6 Technical Sessions at American Geophysical Union Meeting (2014-2018)
- Review Panelist for Texas Sea Grant (2015)

Reviewer for grant proposals from National Science Foundation, Department of Energy, American Chemical Society, National Geographic

Reviewer for over 48 scientific manuscripts published in 21 international journals since 2014, including *PNAS*, *Geology*, *Nature Geosciences*, *Science Advances*, *Geophysical Research Letters*, *PLOS-ONE*, and *Journal of Hydraulic Engineering*, *Nature Communications*

## **Mentorship**

### Post-doc adviser

Hongbo Ma (2020)

Robert Mahon (2017-2018) Current Position: Assistant Professor, University of New Orleans

Wun-Tao Ke (2016-2018) Current Position: Engineer, Sinotech, Taipei, Taiwan

### Ph.D. Students

Kelly Sanks (2016-present)

Chris Cathcart (2019-present)

### Masters Students

Byongsuk “Taewoo” Chun (2019-present)

Sam Zapp (2018-present)

Chris Cathcart (2017-present) Thesis: “The Structure and Dynamics of a River Delta are Related Through its Nourishment Area, Suggesting Optimality” Currently PhD Student, at U. of Arkansas

Amanda Whaling (2016-2018) Thesis: “Changes to Subaqueous Delta Bathymetry Following a High River Flow Event, Wax Lake Delta, LA” Currently at Lower Mississippi Gulf Water Science Center, US. Geological Survey

Kelly Sanks (2016-2018) Thesis: “Marsh Monitoring Shows Minimal Sediment Deficit along the Louisiana Coast” Currently PhD Student, at U. of Arkansas

Thomas Coffey (2016-2017) Thesis: “Role of Unchannelized Flow in Determining Bifurcation Angle in Distributary Channel Networks” Currently at Halliburton

Sean Parry (2015-2017) Thesis: “Utilization of Cross-sets for Paleodischarge Estimation and Paleocurrent Direction Magnitudes of the Parthenon Sandstone, Northwest Arkansas” Currently at GHD International

Gordon McCain III (2014-2016) Thesis: “Influences of Channel Dredging on Avulsion Potential at the Atchafalaya River” Currently Petroleum Geologist at G3 Geological Resources

Kyle Spencer (2014-2016) Thesis: “Statistical Analysis of Fluvial Channel Belts” Currently Client Success Manager, Oseberg Oil and Gas

### Undergraduate Students

Madison Riney (2019 – present)

Sam Vasquez (2018-present, Co-advised with Dr. Sharman)

Ashlynn Haynes (2017-2019)

Kashauna Mason (2017-2019), Currently Ph.D. student at Texas A&M

Michael Amos (2016-2018), Currently M.S., University of New Orleans

Seth Gilchrist (2016-2018, Honors *Cum Laude*, SURF recipient), Thesis: “Analyzing Deltaic Sediment Settling Velocity Variation in a bay of the Wax Lake Delta, Louisiana”

Kaitlyn Hurlbut (2015-2017)

Grayson Lamb (2015-2016) Currently M.S., TCU

Josie Brunick (2014-2015) Currently at EOG

Justin Estep (2014-2015) Currently Ph.D. student at Texas A&M

Thomas Coffey (2015)

#### Ph.D. Committees

Sam Martin, ENDY, (2019-present)

Kalli Dubois (2019-present)

Celia Trunz (2017-present)

Emma Menio (2017-present)

Kirsty Morgan (2016-2019)

Max Cooper (2015-2018)

#### M.S. Committees

Jordan Oefinger (2019-present)

Francisco Rusconi (2017)

#### Undergraduate Honors Committees

Mason Frucci (2018)

Spencer Wilbur (2018-present)

## **Presentations 2014-2019**

Ω for an invited talk, Underlined names are mentored scientists.

**Shaw, J.B.**, K.G. Mason, G. McCain, (2019) The Atchafalaya River Avulsion – control of Nature or control of dredging?, *American Geophysical Union Meeting*, San Francisco, CA

Ω**Shaw, J.B.**, C.A. Cathcart, E. Katifori, A. Konkol, R.P. Hale, R.L. Bain, R.W. Wagner (2019) Controls on Branching and Looping Channels on River Deltas, *American Geophysical Union Meeting*, San Francisco, CA

Cathcart, C.A., **J.B. Shaw**, (2019). The Structure and Dynamics of a River Delta are Related Through its Nourishment Area, Suggesting Optimality, *American Geophysical Union Meeting*, San Francisco, CA

Zapp, S.M., **J.B. Shaw**, K.M. Straub, K.M. Sanks, R. Dutt (2019). Consolidation of Deltaic Marsh Sediments and Their Contribution to Coastal Subsidence in Physical Experiments, *American Geophysical Union Meeting*, San Francisco, CA

Sanks, K.M., **J.B. Shaw**, K.M. Straub, S.M. Zapp, R. Dutt (2019). The Influence of Marsh Sediment Accumulation on Deltaic Surface Processes in a Physical Experiment, *American Geophysical Union Meeting*, San Francisco, CA

Amos, M.A., R.C. Mahon, **J.B. Shaw**, C.A. Cathcart (2019). Sediment transport dynamics and the evolution of subaqueous delta channel levees, *American Geophysical Union Meeting*, San Francisco, CA

- ΩShaw, J.B., Ke, W.-T., Mahon, R.C., Cathcart, C.A.**, (2019). Insights on Channel and Sediment Dynamics from the Wax Lake Delta, *U. of Arkansas ENDY/Geosciences Seminar*, Fayetteville, AR
- ΩShaw, J.B., Ke, W.-T., Mahon, R.C., Cathcart, C.A.**, (2019). Insights on Channel and Sediment Dynamics from the Wax Lake Delta, *LSU Geology & Geophysics Seminar*, Baton Rouge, LA
- Mahon, R.C., J.B. Shaw**, (2018). EP31D-2379 A Faithful Record of Channel Mouth Bifurcation Angles in River Delta Stratigraphy on Earth and Mars, *American Geophysical Union Meeting*, Washington, DC
- Shaw J.B., W-T Ke, R.C. Mahon, C.A. Cathcart** (2018). Distributary Channel Networks Modeled Using Non-linear Viscous Fingering, *American Geophysical Union Meeting*, Washington, DC
- Cathcart, C.A., J.B. Shaw**, (2018). Nourishment Area Asymmetry Relates A Distributary Channel Network's Structure and Dynamics, *American Geophysical Union Meeting*, Washington, DC
- Sanks, K.M., J.B. Shaw**, (2018). Keeping Pace with Relative Sea Level Rise: Marsh Platform Monitoring Shows Minimal Sediment Deficit along the Louisiana Coast, *American Geophysical Union Meeting*, Washington, DC
- Mason, K.G., J.B. Shaw**, (2018). Who wins? Mississippi vs Atchafalaya, *American Geophysical Union Meeting*, Washington, DC
- ΩShaw, J.B., W-T. Ke, R.C. Mahon** (2018) Modeling Deltaic Distributary Networks, *Department of Energy Basic Energy Science PI conference*, Gaithersburg, MD
- ΩShaw, J.B., Coffey, T.S., Ke, W.-T., Mahon, R.C.**, (2018). Processes and Stratigraphic Products of River Delta Channel Networks, *University of Tulsa GeoSeminar Series*, Tulsa, OK
- ΩShaw, J.B., T.S. Coffey, W-T. Ke**, (2018) An Emergent Bifurcation Angle on River Deltas, *Geological Society of America Meeting*, Indianapolis, IN
- ΩWhaling, A.R., Shaw, J.B.**, (2018) Changes to subaqueous delta bathymetry following a high river flow event, Wax Lake Delta, LA, *USGS Lower Mississippi Gulf Web Seminar*, Fayetteville, AR
- ΩSanks, K.M., Shaw, J.B.**, (2018) Keeping Pace with Relative Sea Level Rise: Marsh Platform Monitoring Shows Minimal Sediment Deficit along the Louisiana Coast, *USGS Lower Mississippi Gulf Web Seminar*, Fayetteville, AR
- Amos, M., A.R. Whaling, J.B. Shaw**, (2017). Flow Field Measurements around Distributary Channels on Wax Lake Delta, Louisiana, USA, *American Geophysical Union Meeting*, New Orleans, Louisiana
- Ke W-T, J.B. Shaw**, (2017). The geometry of the numerical distributary channel network on the river delta, *American Geophysical Union Meeting*, New Orleans, Louisiana
- Shaw, J.B., T.S. Coffey**, (2017) An Emergent Bifurcation Angle on River Deltas, *American Geophysical Union Meeting*, New Orleans, Louisiana
- Olliver, E., D. Edmonds, **J.B. Shaw**, (2017). The influence of vegetation on the transport pathways and residence time of surface water on the deltaic islands of Wax Lake Delta, LA, *American Geophysical Union Meeting*, New Orleans, Louisiana
- Sanks, K.M., J.B. Shaw**, (2017). Field Monitoring Shows Smaller Sediment Deficit to the Louisiana Coast, *American Geophysical Union Meeting*, New Orleans, Louisiana
- Whaling A. R., J.B. Shaw**, (2017) Changes to subaqueous delta bathymetry following a high river flow event, Wax Lake Delta, LA, USA, *American Geophysical Union Meeting*, New Orleans, Louisiana

- Shaw, J.B., T.S. Coffey, W.-T. Ke**, (2017). Congruent Bifurcation Angles in River Delta and Tributary Channel Networks, *River, Coastal Estuarine Morphodynamics Meeting*, Padua, Italy
- ΩKe, W.-T., J.B. Shaw** (2017), “Numerical Model for the growth of distributary channel bifurcations on river deltas” Japan Geophysical Union Conference, Tokyo, Japan
- ΩShaw, J.B.**, Miller K., McElroy, B., (2016). Predicting river mouth channel bifurcation length scale using conservation of fluid mass, *Community Surface Dynamics Modelling Software Annual Conference*, University of Colorado, Boulder, CO
- ΩShaw, J.B., Coffey, T.S.**, (2016) The dynamics of distributary networks, *Department of Energy Basic Energy Science PI conference*, Gaithersburg, MD
- ΩShaw, J.B.**, (2016). Lengths and Angles, progress understanding delta morphodynamics, *Texas A&M Geology Seminar*, College Station, TX
- Shaw, J.B., McCain. G.**, (2016) The Atchafalaya River Avulsions – Control of Nature of Control of Dredging?, *American Geophysical Union Fall Meeting*, San Francisco, CA
- Hurlbut, K.E., J.B. Shaw, Estep, J.D.**, Edmonds, D.A, (2016). Measuring delta volumetric change and composition using a streakline-based method on the Wax Lake Delta, *American Geophysical Union Fall Meeting*, San Francisco, CA
- Wagner, R. W., Lague, D., Mohrig, D. C., Passalacqua, P., **Shaw, J.**, Moffett, K., (2016). The Time-Lapse Delta: Quantifying Landscape Change on a Prograding Delta Top, *American Geophysical Union Fall Meeting*, San Francisco, CA
- Coffey, T. S., Shaw, J. B.** (2016), Role of Unchannelized Flow in Determining Bifurcation Angle in Distributary Channel Networks, *American Geophysical Union Fall Meeting*, San Francisco, CA
- Shaw, J. B.**, Miller K., McElroy, B., (2015), Predicting river mouth channel bifurcation length scale using conservation of fluid mass, *American Geophysical Union Fall Meeting*, San Francisco, CA
- Estep, J.D., J.B. Shaw**, Edmonds, D.A, (2015). Measuring Delta Progradation Using Delta Front Flow Patterns: A New Method of Remote Imagery Analysis on the Wax Lake Delta, *American Geophysical Union Fall Meeting*, San Francisco, CA
- Shaw, J.B.**, McElroy, B., Dec. 19, 2014, Scaling Bed Forms Using the Backwater Number, American Geophysical Union Fall Meeting, San Francisco, CA
- ΩShaw, J.B.**, Mohrig, D., Sept. 12, 2014, Bathymetry and Flow patterns at channel tips on the Wax Lake Delta, Tulane University Department Seminar, New Orleans, LA
- ΩShaw, J.B.**, Mohrig, D., July 21-24, 2014, The End (and Beginning) of Channels on the Wax Lake Delta, International Deltas Meeting, Istomino, Russia

### **Public Presentations**

- Shaw, J.B., Coffey, T.S., Ke, W.-T., Mahon, R.C.**, (2018). Processes and Stratigraphic Products of River Delta Channel Networks, *Tulsa Geological Society*, Tulsa, OK
- Shaw, J.B.**, Mohrig, D., (2014). Bathymetry and Flow patterns at channel tips on the Wax Lake Delta, *Fort Smith Geological Society*, Fort Smith, AR