

# Travis Swanson

Dept. of Earth, Environmental, and Planetary Sci.  
Rice University  
6100 Main Street, Houston, TX 77005

[ts42@rice.edu](mailto:ts42@rice.edu)  
+1-210-865-7760  
[www.tswanson.net](http://www.tswanson.net)

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## EDUCATION

- Ph.D., Geological Sciences August 2015  
The University of Texas at Austin, Jackson School of Geosciences  
Dissertation: Bedform interaction and preservation  
Advisor: Dr. David Mohrig  
Co-Advisor: Dr. Gary Kocurek  
GPA: 3.97/4.00
- M.S., Geological Sciences May 2010  
The University of Texas at Austin, Jackson School of Geosciences  
Thesis: Heat Transport and Tracing within the Hyporheic Zone of a Pool-Riffle-Pool Sequence  
Advisor: Dr. Bayani Cardenas  
GPA: 3.93/4.00
- B.S., Hydrogeology / Environmental Geology August 2007  
The University of Texas at Austin, Jackson School of Geosciences  
GPA: 3.81/4.00

## PROFESSIONAL EXPERIENCE

- Rice University, Department of Earth, Environmental and Planetary Sciences Oct 2016-Present  
Shell Center for Sustainability Postdoctoral Research Fellow  
Houston, TX
- Large-scale (~600km), long-term (500 yr) simulation of Texas' coastal barrier system response to sea-level rise
  - Onshore and near shore sediment sampling/coring
  - Create and lead outreach activities
  - Mentor graduate student research
  - Apply for and obtain external funding
  - Develop lectures and co-teach Siliciclastic Depositional Systems
- Shell Exploration and Production International Inc. – Clastics research 2015-2016  
Clastics Research Geologist  
Houston, TX
- Modern depositional environment and subsurface data analytics
  - Production scale aeolian reservoir static property prediction and modeling
- The University of Texas at Austin, Jackson School of Geosciences 2010-2015  
Research Assistant  
Austin, TX
- Numerical modeling of aeolian sedimentary systems and stratigraphic preservation driven by allogenic and autogenic processes
  - Aeolian dune alignment theory from time lapse airborne LiDAR
  - Bedform morphology and fluid-bed morphology interactions identified using remotely sensed river bathymetry
  - Designed and executed successful field campaigns
- Shell Exploration and Production International Inc. – Clastics research Summer 2014  
Post Grad Intern  
Houston, TX
- Sector scale static reservoir property modeling
  - Software development

The University of Texas at Austin, Jackson School of Geosciences  
Teaching Assistant 2008-2010  
Austin, TX  
•Instructional leader in field, lab, and supplemental sessions with groups of 5 to 30 students

The University of Texas at Austin, Bureau of Economic Geology 2006-2007  
Undergraduate Research Assistant Austin, TX  
•Acquired, logged, and processed soil core for chemical and physical analysis

### **SELECTED HONORS, AWARDS and GRANTS**

International Association of Sedimentologists Postdoctoral Research Grant 2018  
Shell Outstanding Researcher Award 2014  
Nestle Waters Inc. "Every Drop Counts" Scholarship 2012  
Geological Society of America Student Grant 2009  
ConocoPhillips SPIRIT Scholar 2009  
Information Technology Services' Commitment, Attitude, Service, Teamwork Award 2006

### **COURSE INSTRUCTION EXPERIENCE** (Link: [Course instructor survey results](#))

Rice University  
8. Course co-instructor: Siliciclastic Depositional Systems Spring 2018  
The University of Texas at Austin  
7. Lab instructor: Sustaining a planet Fall 2010  
6. Teaching assistant: Introduction to hydrogeology Spring 2010  
5. Field instructor: Hydrogeology field camp Summer 2009  
4. Teaching assistant: Introduction to hydrogeology Spring 2009  
3. Lab instructor: Groundwater hydrology Fall 2008  
2. Field instructor: Hydrogeology field Camp Summer 2008  
1. Lab instructor: Earth's climate: past, future, and present Spring 2008

### **SERVICE EXPERIENCE**

Invited field instructor at the 37<sup>th</sup> National Association of Black Geologists Field Trip: Morphology, Sedimentology & Hydrology of Panther and Spring Creek at Montgomery Co. Preserve. (Link: [flyer PDF](#)) Fall 2018

Science Olympiad test writer and proctor, Rice University, Houston, TX Spring 2018

Outstanding student presentation award judge: AGU Fall Meeting, New Orleans Winter 2017

The Texas coast and its response to sea-level change. World Oceans Day at The Houston Museum of Natural Science, Houston, TX. (Link: [media coverage](#)) Summer 2017

Peer Reviewer (Link: [Publons Profile](#)) 2012 – Present

Geophysical Research Letters (total: 4)  
Water Resources Research (total: 3)  
Earth Surface Processes and Landforms (total: 1)  
Sedimentology (total: 1)  
Journal of Geophysical Research - Earth Surface (total: 1)  
Island Arc (total: 1)

## PEER REVIEWED PUBLICATIONS (Link: [Google Scholar Profile](#))

\*undergraduate collaborator first author (total: 2)

### *In preparation*

**Swanson, T.** Lorenzo-Trueba, J., Anderson, J. Nittrouer, J. *in preparation for Marine Geology*, Exploring the morphodynamic response of coastal barriers to sea-level rise along the Texas Gulf Coast

Cardenas, B. T., T. Goudge, C. Hughes, D. Mohrig, J. Levy, **T. Swanson**, *in preparation for Sedimentology*, Testing the preservation of river properties in exhumed channel-belts: The Cretaceous Cedar Mountain Formation, Utah, USA, as an analog to fluvial sinuous ridges on Mars

### *Submitted*

Cardenas, B. T., G. Kocurek, D. Mohrig, **T. Swanson**, S. Brothers, and C. Hughes, *submitted to Journal of Sedimentary Research*, Preservation of autogenic processes and allogenic forcings within set-scale aeolian architecture II: the scour-fill dominated Jurassic Page Sandstone, Arizona ([preprint](#))

**Swanson, T.**, D. Mohrig, G. Kocurek, B. T. Cardenas, M. Wolinsky, *submitted to Journal of Sedimentary Research*, Preservation of autogenic processes and allogenic forcings within set-scale aeolian architecture I: numerical experiments ([preprint](#))

### *In revision*

\*Palermo, R., D. Mohrig, A. Piliouras, and **T. Swanson**, *in revision for Marine Geology*, Connecting change in shoreline morphology to change in retreat rate following Hurricanes Ida and Harvey at Sargent Beach, Texas, USA

### *Published*

8. **Swanson, T.**, D. Mohrig, G. Kocurek, M. Perillo, and J. Venditti, 2017, Bedform spurs: a result of a trailing helical vortex wake, *Sedimentology*. ([pdf link](#))

7. **Swanson, T.**, D. Mohrig, G. Kocurek, and L. Man, 2017, A surface model for aeolian dune topography, *Mathematical Geosciences*. ([pdf link](#))

6. **Swanson, T.**, D. Mohrig, and G. Kocurek, 2016, Aeolian dune sediment flux variability over an annual cycle of wind, *Sedimentology*. ([pdf link](#))

5. Eastwood, E. N., G. Kocurek, D. Mohrig, and **T. Swanson**, 2012, Methodology for reconstructing wind direction, wind speed and duration of wind events from aeolian cross-strata: *J. Geophys. Res.*, v. 117, p. F03035. ([pdf link](#))

4. Nowinski, J., M. Bayani Cardenas, A. Lightbody, **T. Swanson**, and A. H. Sawyer, 2012, Hydraulic and thermal response of groundwater-surface water exchange to flooding in an experimental aquifer: *Journal of Hydrology*. ([pdf link](#))

3. \*Gerecht, K., M. Cardenas, A. Guswa, A. Sawyer, J. Nowinski, and **T. Swanson**, 2011, Dynamics of hyporheic flow and heat transport across a bed-to-bank continuum in a large regulated river: *Water Resources Research*, v. 47. ([pdf link](#))

2. **Swanson, T.**, and M. Cardenas, 2011, Ex-Stream: A MATLAB program for calculating fluid flux through sediment-water interfaces based on steady and transient temperature profiles: *Computers & Geosciences*, v. 37, p. 1664-1669. ([pdf link](#))

1. **Swanson, T.**, and M. Cardenas, 2010, Diel heat transport within the hyporheic zone of a pool-riffle-pool sequence of a losing stream and evaluation of models for fluid flux estimation using heat: *Limnology and oceanography*, v. 55, p. 1741-1754. ([pdf link](#))

## OTHER PUBLICATIONS

2. **Swanson, T.** (2015). Bedform interaction and preservation, PhD dissertation, The University of Texas at Austin ([pdf link](#))

1. **Swanson, T.** (2010). Heat transport and tracing within the hyporheic zone of a pool-riffle-pool sequence, MS Thesis, The University of Texas at Austin ([pdf link](#))

## INVITED PRESENTATIONS

4. **Swanson, T.**, Exploring the dynamic behavior of sedimentary systems. October 9 2018, Department of Geological and Environmental Sciences, Appalachian State University, Boone, NC.

3. **Swanson, T.**, Lorenzo-Trueba, J., Anderson, J., Nittrouer, J., Exploring the morphodynamic response of coastal barriers to sea-level rise along the Texas Gulf Coast. The Van Tuyl Lecture series at the Colorado School of Mines, September 20 2018, Golden, CO. ([seminar schedule](#), [presentation pdf](#))

2. **Swanson, T.**, Lorenzo-Trueba, J., Anderson, J., Nittrouer, J., Exploring the morphodynamic response of coastal barriers to sea-level rise along the Texas Gulf Coast. John Fest 2018: A Celebration of John Anderson. Rice University, Houston, TX. ([program pdf](#), [presentation pdf](#))

1. **Swanson, T.**, D. Mohrig, G. Kocurek, M. Wolinsky, and C. Hern, Surface-based aeolian stratigraphy, Invited oral presentation at AGU 2014 Fall Meeting. San Francisco, CA ([abstract link](#))

## SCHOLARLY PRESENTATIONS WITH ABSTRACTS

\*undergraduate presenter (total: 6)

### *Submitted Abstracts*

34. **Swanson, T.**, Mohrig, D., Kocurek, G., Cardenas, B., Autogenic Processes and Environmental Forcings Recorded in Aeolian Stratigraphy II: Numerical Experiments, Submitted abstract, AAPG ACE 2019, San Antonio, TX

33. Cardenas, B., Kocurek, G., Mohrig, D., **Swanson, T.**, Hughes, C., Brothers, S., Autogenic Processes and Environmental Forcings Recorded in Aeolian Stratigraphy I: the Jurassic Page Sandstone, Arizona, USA, Submitted abstract, AAPG ACE 2019, San Antonio, TX

### *Accepted Abstracts*

32. **Swanson, T.**, Palermo, R., Anderson, J., Nittrouer, J., Exploring the influence of bay morphology during coastal barrier retreat. *Accepted abstract*, AGU Fall Meeting 2018 ([abstract link](#))

31. Cardenas, B. T., Mohrig, D., Goudge, T., Hughes, C., Levy, J., **Swanson, T.**, and Mason, J., Anatomy of exhumed river channel-belts, *Accepted abstract*, AGU Fall Meeting 2018 ([abstract link](#))

30. Palermo, R., Ashton, A., **Swanson, T.**, Lorenzo-Trueba, J., Exploring alongshore-coupled barrier island evolution: How does overwash affect developed and undeveloped barrier evolution and stability?, *Accepted abstract*, AGU Fall Meeting 2018 ([abstract link](#))

29. Chenliang, W., Nittrouer, J., **Swanson, T.**, Dune morphodynamics and forward models of set-scale architecture within the backwater zone of the Mississippi River, USA. *Accepted abstract*, AGU Fall Meeting 2018 ([abstract link](#))

## ***Presented Abstracts***

28. Odezulu, C. I., **Swanson, T.**, Anderson, J. B., Effects of Highstand Mud Accumulation on the Evolution of the Central Texas Coast. AAPG 2018 Annual Convention and Exhibition. Salt Lake City, UT ([abstract link](#))
27. Cardenas, B. T., Kocurek, G., Mohrig, D., **Swanson, T.**, Hughes, C. M., Brothers, S. C., Goudge, T. A., Ancient environmental forcings recorded in aeolian stratigraphy: an Earth analog to aeolian strata on Mars. 49th Lunar and Planetary Science Conference 2018 (LPI Contrib. No. 2083) ([pdf link](#))
26. Cardenas, B. T., Goudge, T.A., Hughes, C.M., Mohrig, D., Mason, J., **Swanson, T.**, Levy, J.S., Testing the preservation of river channel properties in Earth analogs to martian fluvial sinuous ridges. 49th Lunar and Planetary Science Conference 2018 (LPI Contrib. No. 2083) ([pdf link](#))
25. **Swanson, T.**, Lorenzo-Trueba, J., Nittrouer, J., Anderson, J., 2018, Exploring the morphodynamic response of coastal barriers to sea-level rise along the Texas Gulf Coast. Industry-Rice Earth Science Symposium (IRESS), Rice University, Houston, Texas ([poster pdf link](#))

## **2017**

24. **Swanson, T.**, Lorenzo-Trueba, J., Anarde, K., Odezulu, C., Anderson, J., Nittrouer, J., 2017, Exploring the morphodynamic response of coastal barriers to sea-level rise along the Texas Gulf Coast. Oral presentation at AGU Fall meeting 2017. New Orleans, LA ([abstract link](#), [presentation pdf](#))
23. Cardenas, B., Kocurek, G., Mohrig, D., **Swanson, T.**, 2017, Coupling Aeolian Stratigraphic Architecture to Paleo-Boundary Conditions: The Scour-Fill Dominated Jurassic Page Sandstone. Poster presented at AGU Fall meeting 2017. New Orleans, LA ([abstract link](#))
22. **Swanson, T.**, Katherine, A., Chris, O., John, S., Nittrouer, J., Anderson, J., 2017, Connecting morphodynamic depth of closure to shoreline change along the Texas coast. Industry-Rice Earth Science Symposium (IRESS), Rice University, Houston, Texas, February 23-24, 2017. ([poster pdf link](#))

## **2016**

21. \*Palermo, R., Mohrig, D., Piliouras, A., and **Swanson, T.**, 2016, Spatial and Temporal Variability in Erosion Generating a Sea Cliff and Wave-Cut Platform that make up the Holocene Transgressive Ravinement Surface at Sargent Beach, Texas, USA: 32th IAS Meeting of Sedimentology, Marrakech, Morocco, May 23 – 25, 2016. ([abstract link](#))
20. \*Palermo, R., Mohrig, D., Piliouras, A., and **Swanson, T.**, 2016, Variability in retreat rates and roughness of a sea-cliff at Sargent Beach, Texas: Abstract EP23A-0954, presented at AGU Fall Meeting. San Francisco, CA ([abstract link](#))

## **2015**

19. \*Palermo, R., Mohrig, D., Piliouras, A., and **Swanson, T.**, 2015, Rates and Mechanisms of Erosion Generating a Wave-Cut Platform at Sargent Beach, Texas, USA, Abstract EP21D-07 presented at AGU 2015 Fall Meeting, San Francisco, CA ([abstract link](#))

## **2013**

18. Zamora, P. B., M. B. Cardenas, **T. E. Swanson**, D. Tait, I. R. Santos, and D. Erler, 2013, Thermal dynamics of intertidal sediment affected by diffuse groundwater discharge, ASLO Aquatic Sciences Meeting, New Orleans, Louisiana ([abstract link](#))

17. Cardenas, M. B., K. E. Gerecht\*, M. S. Markowski\*, J. D. Nowinski, A. H. Sawyer, **T. E. Swanson**, and A. J. Guswa, 2013, How the pulse of a river affects its liver, ASLO Aquatic Sciences Meeting, New Orleans, Louisiana. ([abstract link](#))

## 2012

16. **Swanson, T.**, Mohrig, D., Kocurek, G., Pedersen, A., 2012, Geometric Aeolian dune crest migration model. Poster presented at 2012 AGU Fall Meeting. San Francisco, CA. ([abstract link](#))

15. Cardenas, M. B., A. H. Sawyer, K. E. Gerecht, M. S. Markowski\*, B. A. Francis, L. K. Francis\*, **T. E. Swanson**, J. D. Nowinski, and A. J. Guswa, 2012, Groundwater-surface water interactions in a regulated river, ASLO Summer Meeting, Lake Biwa, Japan. ([abstract link](#))

## 2011

14. **Swanson T.** and D. Mohrig, 2011, Incidence angle dependent sediment routing: A proposed mechanism for fluvial bedform interactions. Geological Society of America Abstracts with Programs, Vol. 43, No. 5, p. 374 ([abstract link](#))

13. Befus, K. M., M. B. Cardenas, **T. E. Swanson**, D. V. Erler, I. R. Santos, D. R. Tait, 2011, Groundwater flow and heat transport dynamics across an intertidal zone, AGU Fall Meeting, San Francisco, California. ([abstract link](#))

12. Befus, K. M., M. B. Cardenas, **T. E. Swanson**, D. V. Erler, I. R. Santos, and D. Tait, Fluid and heatfluxes across the intertidal zone, Water Resource Sustainability Issues on Tropical Islands, Honolulu, Hawaii, November, 2011. ([conference program pdf](#))

11. Befus, K.M., M.B. Cardenas, **T.E. Swanson**, D. Erler, I. Santos; D. Tait. Fluid and heat fluxes across the intertidal zone. Water Resource Sustainability Issues on Tropical Islands Conference, 2011. ([conference program pdf](#))

## 2010

10. \*Gerecht, K., M. B. Cardenas, A. J. Guswa, A. H. Sawyer, **T. E. Swanson**, J. D. Nowinski, Hyporheic flow and heat transport within a bed-to-bank transect of a large regulated river: Colorado River, Austin, TX, AGU Fall Meeting, San Francisco, California, December, 2010. ([abstract link](#))

9. Cardenas, M. B., P. L. Cook, K. E. Gerecht\*, H. S. Jiang, M. S. Markowski\*, J. D. Nowinski, A. H. Sawyer, **T. E. Swanson**, J. L. Wilson, Fluid dynamic interactions near sediment-water interfaces in aquatic and coastal environments, ASLO Aquatic Sciences Meeting, June 2010. ([abstract link](#))

## 2009

8. **Swanson, T. E.**, M. B. Cardenas, A. H. Sawyer, and J. D. Nowinski, 2009, Evaluation of models for heat tracing in streambeds (hyporheic zones) along a pool-riffle-pool sequence: Jaramillo Creek, Valles Caldera National Preserve, NM, GSA Abstracts with Programs, Portland, Oregon. ([abstract link](#), [poster pdf](#))

7. Cardenas, M. B., K. E. Gerecht, M. Markowski, J. D. Nowinski. A. H. Sawyer, B. A. Stanley, and **T. E. Swanson**, 2009, The familiar as a frontier: persistent transient stream-groundwater interactions, GSA Abstracts with Programs, Portland, Oregon. ([abstract link](#))

6. Nowinski, J., Cardenas, M., **Swanson, T.**, Lightbody, A., 2009, Response of intra-meander hyporheic exchange to flooding and permeability change in a losing artificial stream. GSA Abstracts with Programs, Portland, Oregon. ([abstract link](#))

5. \*Gerecht, K., Markowski, M., Nowinski, J., Sawyer, A., **Swanson, T.**, Cardenas, M., 2009, Fluid flow and heat transport within the hyporheic and riparian zones of a regulated river: Colorado River, Austin, TX. GSA Abstracts with Programs, Portland, Oregon. ([abstract link](#))

4. Chaudhary, K., Sharp, J M., Holt, J.2, Al-Johar, M., **Swanson, T.**, Greenbaum, J., Nowinski, J., Smith, V., Brothers, T., 2009, Multiple geophysical methods for identifying and mapping caves in the recharge zone of the Edwards aquifer, Texas. Poster presented at GSA South-Central Section - 43rd Annual Meeting. Geological Society of America Abstracts with Programs, Vol. 41, No. 2, p. 8 ([abstract link](#))

## 2008

3. **Swanson, T.**, Nowinski J., Sawyer A., Marr J., Lightbody, A., Cardenas B, 2008, 3D Surface Water – Groundwater interactions in a large experimental channel. GSA Abstracts with Programs, Houston, Texas. ([abstract link](#))

2. Stanley, B., **Swanson T.**, Cardenas, B. Effects of Dam-Induced Daily River Stage Fluctuations and Sedimentary Architecture of a Large Gravel Bar on Groundwater Flow Paths, 2008, GSA Abstracts with Programs, Houston, Texas. ([abstract link](#))

1. \*Harlow, J., Stanley, B., Cox, S., Vyas, R., Linhoff, B., Sawyer, A., **Swanson, T.**, Groffman, A., Rearick, M., Cardenas, B, 2008, Groundwater - Surface water interactions and geochemistry along a high-sinuosity meander in a mountain meadow. GSA Abstracts with Programs, Houston, Texas. ([abstract link](#))

## REFERENCES

Name	Email	Telephone	Relationship to applicant
John Anderson <sup>1</sup>	<a href="mailto:johna@rice.edu">johna@rice.edu</a>	+1 713 348 4884	Postdoc mentor
Jeffery Nittrouer <sup>1</sup>	<a href="mailto:nittrouer@rice.edu">nittrouer@rice.edu</a>	+1 713 348 4886	Postdoc mentor
David Mohrig <sup>2</sup>	<a href="mailto:mohrig@jsg.utexas.edu">mohrig@jsg.utexas.edu</a>	+1 512 471 2282	PhD advisor
Gary Kocurek <sup>2</sup>	<a href="mailto:garyk@jsg.utexas.edu">garyk@jsg.utexas.edu</a>	+1 979 263 4307	PhD co-advisor

<sup>1</sup>Department of Earth, Environmental and Planetary Sciences, Rice University, MS-126, 6100 Main Street, Houston, TX 77005 USA

<sup>2</sup>Jackson School of Geosciences, The University of Texas at Austin, 2305 Speedway Stop C1160, Austin, TX 78712-1692 USA