

# Curriculum Vitae

## Joel P. L. Johnson

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## Education

**Massachusetts Institute of Technology**, Cambridge, MA 2001-2007  
**Ph.D.** in Earth Science, September 2007  
Thesis: Feedbacks between erosional morphology, sediment transport and abrasion in the transient adjustment of fluvial bedrock channels. Advisor: Kelin Whipple

**Massachusetts Institute of Technology**, Cambridge, MA 1993-1997  
**B.S.** in Earth Science, June 1997  
Thesis: Laboratory study of rock friction at high velocity: implications for constitutive laws.  
Advisor: Chris Marone

## Professional Experience

**Jackson School of Geosciences, The University of Texas at Austin**  
**Associate Professor**, Department of Geological Sciences Sept 2017 – Present  
**Assistant Professor**, Department of Geological Sciences Aug 2009 – Aug 2017  
My research in geomorphology focuses on quantifying feedbacks among topography, flow and surface processes, with particular interests in climatic and lithologic controls on landscape evolution, mountain river morphodynamics, and tsunami and storm surge sediment transport.

**U.S. Geological Survey**, Menlo Park, CA 2007 - 2009  
**Mendenhall Postdoctoral Fellow**  
I developed a wireless sensor network to measure shallow overland flow on hillslopes, and used it and conventional sensors to monitor hydrology and arroyo incision along a discontinuous ephemeral channel network in southeastern Arizona.

**New England Research, Inc.**, White River Junction, VT 1997-2001  
**Staff Scientist** at a small company focused on rock mechanics.  
I conducted applied research on pore structure modeling and flow through rock fractures and helped design custom laboratory equipment for measuring rock core properties ([www.ner.com](http://www.ner.com)).

## Publications (peer-reviewed)

ResearcherID B-8842-2012, ORCID iD 0000-0001-6286-9949  
"\*" Denotes student advisee

Gimbert F, BM Fuller, MP Lamb, VC Tsai, **JPL Johnson** (2018), Particle transport mechanisms and induced seismic noise in steep flume experiments with accelerometer-embedded tracers, *Earth Surface Processes and Landforms*, doi:10.1002/esp.4495

\*Murphy BP, **JPL Johnson**, NM Gasparini, GS Hancock, EE Small (2018), Weathering and abrasion of bedrock streambed topography, *Geology*, 46 (5): 459-462, <https://doi.org/10.1130/G40186.1>

**Johnson, JPL** (2017), Clustering statistics, roughness feedbacks and randomness in experimental step-pool morphodynamics, *Geophys. Res. Lett.*, 44, doi:10.1002/2016GL072246.

**Johnson, JPL**, K. Delbecq, and W. Kim (2017), Predicting paleohydraulics from storm surge and tsunami deposits: Using experiments to improve inverse model accuracy, *J. Geophys. Res. Earth Surf.*, 122, doi:10.1002/2015JF003816.

**Johnson, JPL** (2016), Gravel threshold of motion: A state function of sediment transport disequilibrium?, *Earth Surface Dynamics*. 4, 685-703, doi:10.5194/esurf-4-685-2016 .

\*Murphy BP, **JPL Johnson**, NM Gasparini, LS Sklar (2016), A mechanism for the climatic control of bedrock river incision, *Nature* , 532, 223-227, doi:10.1038/nature17449 .

**Johnson, JPL**, K Delbecq, W Kim, D Mohrig, (2016), Experimental tsunami deposits: linking hydrodynamics to sediment entrainment, advection lengths and downstream fining, *Geomorphology*, 253, 478-490, doi:10.1016/j.geomorph.2015.11.004.

**Johnson, JPL**, \*AC Aronovitz, W Kim (2015), Coarser and rougher: Effects of fine gravel pulses on experimental step-pool channel morphodynamics, *Geophys. Res. Lett.*, 42, 8432–8440, doi:10.1002/2015GL066097.

\*Olinde LJ, **JPL Johnson** (2015), Using RFID and accelerometer-embedded tracers to measure probabilities of bed load transport, step lengths, and rest times in a mountain stream, *Water Resources Research*, 51, 7572-7589, doi: 10.1002/2014WR016120

Han J, NM Gasparini, **JPL Johnson** (2015), Measuring the imprint of orographic rainfall gradients on the morphology of steady-state numerical fluvial landscapes, *Earth Surf. Process. Landforms*, 40, 1334-1350. doi: 10.1002/esp.3723.

**Johnson, JPL** (2014), A surface roughness model for predicting alluvial cover and bed load transport rate in bedrock channels, *J. Geophys. Res. Earth Surf.*, 119, 2147-2173, doi: 10.1002/2013JF003000.

Han J, NM Gasparini, **JPL Johnson**, \*BP Murphy (2014), Modeling the influence of rainfall gradients on discharge, bedrock erodibility, and river profile evolution, with application to the Big Island, Hawai'i, *J. Geophys. Res. Earth Surf.*, 119, 1418-1440, doi: 10.1002/2013JF002961.

Delong SB, **JPL Johnson**, KX Whipple (2014), Arroyo channel head evolution in a flash-flood-dominated discontinuous ephemeral stream system, *GSA Bulletin*, v. 126 no. 11-12, p. 1683-1701, doi: 10.1130/B31064.1

Menking JA, J Han, NM Gasparini, **JPL Johnson** (2013), Quantifying the effects of orographic precipitation gradients on river profile evolution in the Kohala peninsula of the Big Island, Hawai'i. *GSA Bulletin*, 125 no. 3-4, 594-608, doi: 10.1130/B30625.1.

\*Sanguinito, S, **JPL Johnson** (2012), Quantifying gravel overlap and dislodgement forces on natural river bars: implications for particle entrainment, *Earth Surf. Process Landforms* **37**, 134-141, DOI: 10.1002/esp.2237 .

**Johnson, JPL**, KX Whipple, LS Sklar (2010), Contrasting bedrock incision rates from snowmelt and flash floods in the Henry Mountains, Utah, *GSA Bulletin*; September/October 2010; v. 122; no. 9/10; p. 1600–1615; doi: 10.1130/B30126.1.

**Johnson, JPL**, KX Whipple (2010), Evaluating the controls of shear stress, sediment supply, alluvial cover and channel morphology on experimental bedrock incision rate, *J. Geophys. Res.*, *115*, F02018, doi:10.1029/2009JF001335.

**Johnson JPL**, KX Whipple, LS Sklar, TC Hanks (2009), Transport slopes, sediment cover, and bedrock channel incision in the Henry Mountains, Utah, *J. Geophys. Res.*, 114, F02014, doi:10.1029/2007JF000862.

Ouimet WB, KX Whipple, BT Crosby, **JP Johnson** and TF Schildgen (2008), Epigenetic Gorges in Fluvial Landscapes. *Earth Surface Processes and Landforms* 33, 1993-2009, doi: 10.1002/esp.1650.

**Johnson JP**, KX Whipple (2007). Feedbacks between erosion and sediment transport in experimental bedrock channels. *Earth Surface Processes and Landforms*, 32 (7), p. 1048-1062, doi: 10.1002/esp.1471.

**Johnson JP**, JP Grotzinger (2006). Affect of Sedimentation on Stromatolite Reef Growth and Morphology, Ediacaran Omkyk Member (Nama Group), Namibia. *South African Journal of Geology*, 109: 87-96. doi:10.2113/gssajg.109.1-2.87

**Johnson, JP.**, S Brown, H Stockman (2006), Fluid flow and mixing in rough-walled fracture intersections, *J. Geophys. Res.*, 111, B12206, doi:10.1029/2005JB004087.

Lamb MP, AD Howard, **JP Johnson**, KX Whipple, WE Dietrich, JT Perron (2006), Can springs cut canyons into rock?, *J. Geophys. Res.*, 111, E07002, doi:10.1029/2005JE002663.

Wobus C, KX Whipple, E Kirby, N Snyder, **JP Johnson**, K Spyropolou, B Crosby, D Sheehan (2006). Tectonics from topography: Procedures, promise and pitfalls. in *GSA Special Paper 398: Tectonics, Climate and Landscape Evolution*. 398, 55-74. doi:10.1130/2006.2398(04).

**Johnson JP**, SR Brown (2001). Experimental mixing variability in intersecting natural fractures, *Geophysical Research Letters* 28(22): 4303-4306. doi:10.1029/2001GL013446.

Stockman HW, **JP Johnson**, SR Brown (2001), Mixing at fracture intersections: influence of channel geometry and the Reynolds and Peclet numbers. *Geophysical Research Letters* 28(22): 4299-4302. doi:10.1029/2001GL013287.

### Book Chapter (peer-reviewed)

Loope DB, RJ Goble, **JPL Johnson** (2014), Prelude to seven slots—filling and subsequent modification of seven broad canyons in the Navajo Sandstone, south-central Utah, in MacLean, J.S., Biek, R.F., and Huntoon, J.E., editors, *Geology of Utah's Far South*: Utah Geological Association Publication 43, p. 11–24.

### Published Data Set (not peer reviewed)

Hsu L, WE Dietrich, LS Sklar, **JPL Johnson** (2014), Debris-flow flume video clips. Figshare. <http://dx.doi.org/10.6084/m9.figshare.978686>

### Manuscripts In Review

Hassan MA, M Salleti, C Zhang, C Ferrer-Boix, **JPL Johnson**, T Muller, C vanFlow, Co-evolution of coarse grain structuring and bed roughness in response to episodic sediment supply in an experimental aggrading channel, submitted to *Earth Surface Processes and Landforms*, July 18, 2019.

### Invited Talks and Conference Presentations

**Johnson JPL**, gave lecture at Department of Geography, University of British Columbia, April 17-19, 2019. Invited by Dr. Marwan Hassan.

**Johnson JPL**, gave lecture at GFZ German Research Centre for Geosciences, Potsdam, May 14-17, 2019. Invited by Dr. Claire Masteller and Dr. Jens Turowski.

**Johnson JPL**, \*K Pretzlav, L Olinde, CC Masteller, DN Bradley, JM Turowski, D Rickenmann (2018), Measuring and modeling disequilibrium gravel transport and threshold evolution during natural floods (invited), Abstract EP-22A=08, presented at 2018 Fall meeting, AGU, Washington DC, 10-14 Dec.

**Johnson JPL**, K Delbecq, W Kim, D Mohrig (2018), Using tsunami sediment transport experiments to improve paleohydraulic inverse models (invited keynote talk), presented at CSDMS 2018: Geoprocesses and Geohazards meeting, Boulder, CO, 22-24 May.

**Johnson JPL**, \*K Goodwin (2015), Using experiments and theory to explain why dryland flash flood channels are morphodynamically different (invited), Abstract H53J-02, presented at 2015 Fall Meeting, AGU, San Francisco, CA, 14-18 Dec.

**Johnson JPL** (2015), Disequilibrium morphodynamics in step-pool experiments: Sorting, clustering and the effect of supply on  $\tau^*_n$  (invited), Workshop on Modeling Mixed-Sediment River Morphodynamics, Delft University of Technology, Delft, The Netherlands 27-29 May 2015 (<http://www.sortingworkshop2015.nl/>)

**Johnson JPL**, KL Delbecq, W Kim, DC Mohrig, (2014), Using experimental tsunami deposits to evaluate and reduce uncertainty in hydraulic reconstructions (invited), Abstract EP11B-01, presented at 2014 Fall Meeting, AGU, San Francisco, CA, 15-19 Dec.

**Johnson JPL**, \*LJ Olinde, \*K Goodwin (2014), Field and flume applications of RFID and accelerometer-embedded gravel and cobble tracers to constrain transport during floods (invited), Abstract EP33C-3650, presented at 2014 Fall Meeting, AGU, San Francisco, CA, 15-19 Dec.

University of Houston, Houston, TX, Department lecture series, October 19, 2012.

University of Natural Resources and Applied Life Sciences (BOKU), Vienna Austria, Department of Civil Engineering and Natural Hazards, Institute of Mountain Risk Engineering, August 14, 2012.

UT Institute for Geophysics (UTIG) Seminar Series, December 3, 2010.

University of Nebraska, Lincoln, NE. Department lecture series, September 24, 2010.

Tulane University, New Orleans, LA. Department lecture series, October 23, 2009.

### Conference Presentations (non-invited, since Fall 2009)

**Johnson JPL** (2019), Constraining extreme event magnitudes using deposit grain size distributions: Uncertainties and Opportunities, Paper No. 218-5, to be presented at 2019 Geological Society of America Annual Meeting, Phoenix AZ, 22-25 Sept.

**Johnson JPL**, A Mote, B Henderson, E Reyes, J Porter (2019), Lessons learned from OnRamps Earth Wind and Fire, a dual-enrollment geoscience course, presented at Earth Educators Rendezvous, Nashville TN, 15-19 July.

\*Franey J, **JPL Johnson** (2018), Effects of grain interlocking on the threshold of motion in gravel-bed rivers, Abstract EP41B-2661, presented at 2018 Fall meeting, AGU, Washington DC, 10-14 Dec.

Masteller CC, NJ Finnegan, **JPL Johnson**, JM Turowski, E Yager, D Rickenmann (2018), The causes and consequences of a temporally variable threshold for motion for fluvial bedload transport, Abstract EP33A-02, presented at 2018 Fall meeting, AGU, Washington DC, 10-14 Dec.

\*Southard, P, **JPL Johnson**, D Rempe, A Matheny (2018), Impact of spring-associated riparian vegetation on channel morphology and sediment distribution in ephemeral dryland channels: Henry

Mountains, Utah, USA, Abstract EP34B-02, presented at 2018 Fall meeting, AGU, Washington DC, 10-14 Dec.

\*Southard, P, **JPL Johnson**, D Rempe, A Matheney (2018), Impact of spring-associated riparian vegetation on channel morphology in ephemeral dryland channels: Henry Mountains, Utah, USA, presented at CSDMS-SEN 2018 Annual meeting, May 22-24, Boulder, CO.

Hodge, RA, E Yager, **JPL Johnson**, A Tranmer (2017), Controls on sediment cover in bedrock-alluvial channels of the Henry Mountains, Utah, Abstract EP33D-06, presented at 2017 Fall meeting, AGU, New Orleans, LA, 11-15 Dec.

\*Southard, P, **JPL Johnson**, D Rempe, A Matheney (2017), Impact of spring-associated riparian vegetation on channel morphology and sediment distribution in ephemeral dryland channels: Henry Mountains, Utah, USA, presented at 48<sup>th</sup> Annual Binghamton Geomorphology Symposium, San Marcos, Texas.

**Johnson JPL**, KL Delbecq, W Kim, DC Mohrig, (2017), Using experimental tsunamis to evaluate sediment deposit characteristics and inverse model predictions, Presentation Number MIS09-08, presented at JpGU-AGU Joint Meeting 2017, May 20-25, Chiba, Japan.

\*Marino EB, **JPL Johnson** (2017), Isolating lithologic controls on landscape morphology in the Guadalupe Mountains, Texas, USA, presented at JpGU-AGU Joint Meeting 2017, May 20-25, Chiba, Japan.

**Johnson JPL** (2016), The balance between keystone clustering and bed roughness in experimental step-pool stabilization, Abstract EP33D-1010, presented at 2016 Fall Meeting, AGU, San Francisco, CA, 12-16 Dec.

\*Murphy BP, **JPL Johnson**, NM Gasparini, LS Sklar (2016), Modeling the feedbacks among chemical weathering, rock strength and abrasional wear in bedrock rivers, Abstract EP32A-06, presented at 2016 Fall Meeting, AGU, San Francisco, CA, 12-16 Dec.

Farin M, VC Tsai, MP Lamb, K Allstadt, **JPL Johnson** (2016), Towards an analytical model for the seismic signal generated by debris flows, Abstract EP21C-0890, presented at 2016 Fall Meeting, AGU, San Francisco, CA, 12-16 Dec.

Storz-Peretz Y, **JPL Johnson**, JB Laronne (2016), Hydraulics and sediment transport during flood bores, presented at Israel Geomorphological Research Group (IGRG) conference, May 26-27.

\*Goodwin K, **JPL Johnson**, E Viparelli (2015), A numerical model of armor development in flash flood-dominated channels: Sensitivity to sediment supply, hydrograph shape, and base flow, Abstract H51E-1412, presented at 2015 Fall Meeting, AGU, San Francisco, CA, 14-18 Dec.

**Johnson JPL**, \*LJ Olinde (2015), Using the threshold of motion as a state variable to predict bed load hysteresis in mountain rivers, Abstract EP24A-08, presented at 2015 Fall Meeting, AGU, San Francisco, CA, 14-18 Dec.

\*Murphy BP, **JPL Johnson**, NM Gasparini, G. Hancock, E. Small (2015), Reach-scale evidence for feedback among chemical weathering, rock strength and erosion in bedrock rivers across Kohala Peninsula, Hawai'i, Abstract EP52A-07, presented at 2015 Fall Meeting, AGU, San Francisco, CA, 14-18 Dec.

Gimbert, F, V Tsai, B Fuller, M Lamb, **JPL Johnson** (2015), Testing, improving and validating models of bedload-induced seismic noise from steep flume experiments, Abstract EP51D-07, presented at 2015 Fall Meeting, AGU, San Francisco, CA, 14-18 Dec.

**Johnson, JPL**, \*LJ Olinde (2015), Explaining bedload hysteresis in mountain streams using a state variable of incipient motion, presented at Gravel Bed Rivers 8 Conference, Kyoto and Takayama, Japan, 14-18 September.

\*Murphy BP, **JPL Johnson**, NM Gasparini, LS Sklar (2015), Climate-dependent chemical weathering as a control on bedrock river incision, presented at FACET Workshop: Feedbacks and coupling among climate, erosion, and tectonics during mountain building, Taipei, Taiwan May 28-June 2.

**Johnson JPL**, \*LJ Olinde, \*K Goodwin (2015), Using RFID and accelerometer-embedded gravel and cobble tracers to constrain transport and bed stability during floods, presented at River Restoration Northwest Symposium, Stevenson, WA, February 3-5.

\*Goodwin K, \*R Rhodes, **JPL Johnson** (2014), Modeling the importance of baseflow and sediment supply on armor development: Contrasting intermittent dryland and perennially-flowing gravel-bedded rivers, Abstract EP53C-3674 presented at 2014 Fall Meeting, AGU, San Francisco, Calif., 15-19 Dec.

\*Olinde LJ, **JPL Johnson** (2014), Quantifying slope and grain size dependent transport thresholds using RFID and accelerometer tracers with on-bed RFID antennas in an upland channel, Abstract EP31E-04 presented at 2014 Fall Meeting, AGU, San Francisco, Calif., 15-19 Dec.

\*Goodwin K, \*R Rhodes, **JPL Johnson** (2013), Armor Development from Decapitated Flash Flood Bores in Supply-Limited Flume Experiments, Abstract EP41D-08, presented at 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.

**Johnson JPL**, \*LJ Olinde (2013), Repeat airborne LiDAR reveals the sensitivity of erosion and deposition patterns to bed topography and grain size distributions, Henry Mountains, Abstract G22A-02 presented at 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.

Leung, V, DC Mohrig, JL Buttles, **JPL Johnson**, DR Montgomery (2013), Flume experiments on the effects of buried wood debris on delta processes and sediment exhumation during a partial, stepped dam removal, Abstract EP31A-0826 presented at 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.

\*Murphy BP, **JPL Johnson**, NM Gasparini, LS Sklar (2013), Climatic controls on mechanical rock strength and channel incision due to bedrock weathering, Kohala Peninsula, Hawaii, Abstract EP52A-04 presented at 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.

\*Olinde LJ, **JPL Johnson** (2013), Characterizing coarse bedload transport during floods with RFID and accelerometer tracers, in-stream RFID antennas and HEC-RAS modeling, Abstract EP32B-05 presented at 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.

\*Rhodes R, \*K Goodwin K, **JPL Johnson** (2013), Transported and Surface Grain Size Changes During Experimental Flash Floods, Abstract EP31B-0854 presented at 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.

**Johnson, JPL**, \*LJ Olinde (2013), Inferring gravel and cobble transport from hydrophone, RFID and accelerometer tracers, presented at International workshop of acoustic and seismic monitoring of bedload and mass movements, Birmensdorf, Switzerland, Swiss Federal Research Institute WSL, 4 – 7 September 2013

\*Olinde LJ, **JPL Johnson** (2013), Evaluating bedload transport in coarse alluvial streams with RFID and motion tracers, presented at IAG (International Conference on Geomorphology), Paris, France, 27-31 August.

\*Goodwin, K, \*R Rhodes, **JPL Johnson** (2013), Armor Development from Decapitated Flash Flood Bores in Supply-Limited Flume Experiments, Abstract 2 presented at Stratodynamics Workshop, Nagasaki, Japan, 28-30 Aug.

**Johnson JPL**, \*AC Aronovitz, W Kim, \*J Funderburg, E Viparelli (2013), Can short-term gravel augmentation lead to long-term bed coarsening?, presented at ICFS (International Conference on Fluvial Sedimentology), Leeds, UK, 14-19 July.

\*Olinde L, **JPL Johnson** (2013), Combining RFID and motion tracers with stationary antennas to monitor bedload transport in coarse alluvial channels, paper no. 35-8, presented at GSA (Geological Society of America) South-Central Section 47th Annual Meeting, 4-5 April.

\*Goodwin K, **JPL Johnson**, R Kaitna (2013), Suspended sediment transport in flash floods: turbulence and boundary shear stress in flume experiments, paper no. 8-4, presented at GSA (Geological Society of America) South-Central Section 47th Annual Meeting, 4-5 April.

**Johnson JPL**, \*AC Aronovitz (2012), The coevolution of bed roughness, grain clustering, surface armoring, hydraulic roughness, and sediment transport rate in experimental coarse alluvial channels: implications for long-term effects of gravel augmentation, Abstract EP23B-0814 presented at Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.

Ryan, AJ, KX Whipple, **JPL Johnson** (2012), Are amphitheater headed canyons indicative of a particular formative process?, Abstract EP51A-0969 presented at 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.

\*Olinde L, **JPL Johnson**, FB Pierson (2012), Evaluating bedload transport with RFID and accelerometer tracers, airborne LiDAR, and HEC-GeoRAS modeling: field experiments in Reynolds Creek, Idaho, Abstract EP31D-0838 presented at 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.

\*Murphy BP, **JPL Johnson** (2012), Climate-dependent sediment production: numerical modeling and field observation of variable grain size distributions from heterogeneous hillslope weathering of fractured basalt flows, Kohala Peninsula, Hawaii, Abstract EP43E-06 presented at 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.

\*Aronovitz AC, **JPL Johnson** (2011), The formation of experimental step-pools in relation to sediment size distribution and transport slope, Abstract EP21C-0713 presented at 2011 Fall Meeting, AGU, San Francisco, CA, 5-9 Dec.

\*Boesch S, **JPL Johnson**, KL Delbecq (2011), An experimental study of tsunami deposit thickness trends, Abstract EP33A-0905 presented at 2011 Fall Meeting, AGU, San Francisco, CA, 5-9 Dec.

\*Delbecq KL, \*S Boesch, **JPL Johnson**, W Kim, D Mohrig (2011), Evaluating paleotsunami deposit models using flume experiments, Abstract EP51D-06 presented at 2011 Fall Meeting, AGU, San Francisco, CA, 5-9, Dec.

Gasparini NM, J Han, **JPL Johnson**, JA Menking (2011), Transient bedrock channel evolution across a precipitation gradient: A case study from Kohala, Hawaii, Abstract EP52A-01 presented at 2011 Fall Meeting, AGU, San Francisco, CA, 5-9, Dec.

Loope DB, RJ Goble, **JPL Johnson** (2011), Blockage of broad sandstone canyons by eolian sand and subsequent cutting of slot canyons in south-central Utah from ~55 to 42 ka, Paper 96-24 presented at 2011 Geological Society of America Annual Meeting, Minneapolis, MN, 9-12 Oct.

**Johnson JPL** (2011), Using accelerometer-embedded cobbles to relate the initiation of motion by lift or drag to near-bed turbulent structures, talk presented at Coherent Flow

Structures in Geophysical Flows at Earth's Surface conference, August 3-5, 2011, Simon Fraser University, Burnaby, BC, Canada.

**Johnson JPL**, NM Gasparini, JA Menking, J Han (2011), Quantifying climatic controls on river incision and landscape evolution, talk presented at Hawaii Ecosystems meeting, June 30-July 1, 2011, Hilo, HI.

Gasparini, NM, JA Menking, J Han, **JPL Johnson** (2010), The influence of climate, lithology and subsidence on the transient evolution of Hawaiian river channels, Abstract EP51G-01 presented at 2010 Fall Meeting, AGU, San Francisco, CA, 13-17 Dec.

\*Polito PJ, **JPL Johnson** (2010), Quantifying mean velocity and turbulence in experimental flash flood bores, Abstract EP23B-0785 presented at 2010 Fall Meeting, AGU, San Francisco, CA, 13-17 Dec.

\*Sanguinito S, **JPL Johnson** (2010), Quantifying the influence of imbrication on forces required to initiate motion of coarse-grained sediment on natural river bars, Abstract EP31A-0720 presented at 2010 Fall Meeting, AGU, San Francisco, CA, 13-17 Dec.

**Johnson JPL**, S DeLong, KX Whipple (2010), Monitoring the sensitivity of active gully erosion to individual runoff events and seasonal soil moisture changes, Abstract EP23B-0782 presented at 2010 Fall Meeting, AGU, San Francisco, CA, 13-17 Dec.

\*Olinde L, **JPL Johnson**, FB Pierson (2010), Quantifying the coevolution of bedload transport rates and bed topography in mountain rivers: a field experiment in Reynolds Creek, ID, Abstract EP31A-0728, presented at 2010 Fall Meeting, AGU, San Francisco, CA, 13-17 Dec.

Menking JA, NM Gasparini, **JPL Johnson**, 2009, The effects of orographic precipitation and lithology on river profiles in the Kohala region of the big island, Hawaii, *Eos Trans. AGU*, 90(52), Fall Meet. Suppl., Abstract EP53B-0625.

**Johnson JPL**, SB DeLong, KX Whipple, DV Malmon (2009), Quantification of coupling between erosion and hydrology in an intensely monitored "field laboratory" in southeastern Arizona, USA, *Eos Trans. AGU*, 90(52), Fall Meet. Suppl., Abstract U43A-0069.

**Johnson JPL**, SB DeLong, KX Whipple, DV Malmon (2009), Feedbacks Between Hydrology and Gully Headwall Erosion in a Discontinuous Arroyo Network, Southeast Arizona: Insights From Field Monitoring Using a Wireless Sensor Network, presentation at AGU Chapman Conference 2009: Examining Ecohydrological Feedbacks of Landscape Change Along Elevation Gradients in Semiarid Regions. Boise and Sun Valley, ID, 4-8 Oct.

## Research Grants

### Current:

Collaborative Research: Reading lithology from topography: How rock properties influence landscape form and evolution in the Guadalupe Mountains, TX and NM.

Amount to UT: \$319,683

Source of support: NSF Geomorphology and Land-Use Dynamics

PI: Joel Johnson. Starts 9/01/2019.

Project is a collaboration with Co-PI Dr. Nicole Gasparini at Tulane University.

Predicting river channel changes during floods from high-resolution topographic data.

Amount to UT: \$10,000

Source of support: Dr. Cecile DeWitt-Morette France-UT Endowed Excellence Fund

Starts 9/01/2019.



Project is a collaboration with Dr. Michal Tal, Aix-Marseille University, Centre Européen de Recherche et d'Enseignement des Géosciences de l'Environnement (CEREGE).

### Previously funded:

Collaborative Research: Modeling and monitoring of landscape evolution along a climate gradient: Kohala Peninsula, Hawaii. \$202,417 (funding amount to UT)

Source of support: NSF Geomorphology and Land-Use Dynamics

Total award period covered: 8/01/2010-7/31/2015 (including 2 year no-cost extension)

This project was a collaboration with PI Prof. Nicole Gasparini at Tulane University. Tulane's budget was \$190,781 from 8/01/2010-7/31/2014. Johnson and Gasparini contributed equally but in different ways to the overall project success. Johnson and his students led the field work component of the project and Gasparini and her research group led numerical modeling efforts, although both worked together closely and contributed to each part of the project.

Evaluating why flash floods are different: An experimental study of sediment transport and sorting by rapidly changing hydrographs. \$100,000

Source of support: American Chemical Society, Petroleum Research Fund

Total award period covered: 1/01/2011-8/31/2014

Johnson was the only PI on this grant.

Quantifying the coevolution of bedload transport and bed topography in mountain rivers: Field and flume experiments using smartrocks. \$322,276

Source of support: NSF Geomorphology and Land-Use Dynamics

Total award period covered: 9/01/2011-8/31/2016 (including 2 year no-cost extension)

Johnson was the only PI on this grant.

REU Site: The Science of Global Change and Sustainability

Source of support: NSF

Total award period covered: 3/01/2012-2/28/2015

Johnson was one of many co-PIs on this award to Prof. Jay Banner through the UT Austin Environmental Science Institute (ESI). Johnson did not receive direct funding, but rather benefitted by mentoring four REU-supported summer undergraduates.

Reading Rock Properties From Topography: Leveraging Lidar and Lithologic Mapping in the Guadalupe Mountains to Quantify a Fundamental Geomorphic Control. \$14,000

Source of support: Jackson School of Geosciences Seed Grant (internal UT)

Total award period covered: 2/17/2016-12/15/2016

This project is a collaboration with UT DGS Prof. Charles Kerans, with the funding all going through Johnson. The seed grant primarily supports preliminary data collection and analysis.

## Graduate and Postdoctoral Advising

### Degrees/postdocs completed

Paul Southard, **M.S.** in Geological Sciences, August 2019. Co-advised by Prof. Daniella Rempe.

Thesis: Impact of spring-associated riparian vegetation on channel morphology: Insights from Henry Mountains, UT.

Emily Bradshaw Marino, **M.S.** in Geological Sciences, May 2017.

Thesis: Isolating lithologic controls on landscape morphology in the Guadalupe Mountains, New Mexico and Texas.

Juliana J Spector, **M.S.** in Geological Sciences, August 2017.

Thesis: Feedbacks between dissolution, abrasion, and bed roughness: A flume investigation of carbonate bedrock incision.

Kealie Goodwin Pretzlav, **Ph.D.** in Geological Sciences, August 2016

Thesis: Armor development and bedload transport processes during snowmelt and flash floods using laboratory experiments, numerical modeling, and field-based motion-sensor tracers.

Brendan Murphy, **Ph.D.** in Geological Sciences, August 2016

Thesis: Feedbacks among chemical weathering, rock strength and erosion with implications for the climatic control of bedrock river incision.

Yael Storz-Peretz, Postdoctoral Researcher, February-May 2016

Project: Experimental flash flood bore hydraulics, sediment transport, and grain size sorting.

Lindsay Olinde, **Ph.D.** in Geological Sciences, May 2015

Thesis: Displacement and entrainment behavior of bedload clasts in mountain streams.

Megan Ferre, **M.A.** in Geological Sciences, May 2015

Alexander Aronovitz (co-advised with Wonsuck Kim), **M.S.** in Geological Sciences, May 2012.

Thesis: Effects of sediment supply and slope on channel topographic roughness and sediment transport.

### **Degrees in progress**

#### **PhD Committee Member (including my advisees)**

**Degrees completed:** Virginia Smith (2012), Jianwei Han (2014, Tulane University), Travis Swanson (2015), Harish Sangireddy (2015), \*Lindsay Olinde (2015), Anastasia Piliouras (2016), \*Brendan murphy (2016), \*Kealie Goodwin (2016), Allan Jones (2017), Jasmine Mason (2018), Muhammad Ashraf (2018), Benjamin Cardenas (2019).

**Degrees in progress:** Michael V. Little

#### **Masters Committee Member (including my advisees)**

**Degrees completed:** \*Alexander Aronovitz (2012), Ellen Reid (2012), Katie Delbecq (2013), \*Megan Ferre (2015), Jenna Kromann (2015), Chuck Abolt (2015), Ye Jin Lim (2016), Juan Munoz (2017), Daniel Aylward (2017), \*Emily Marino (2017), \*Juliana Spector (2017), \*Paul Southard (2019).

**Degrees in progress:** \*Emily Carreno

#### **Undergraduate Honors Thesis Committee Member**

Arisa Ruangsirikulchai (2019), Thaddeus Ellis (2017), Rose Palermo (2016), Brandee Carlson (2013), Elizabeth Rinehard (2011), Benjamin Bass (2011)

### **Undergraduate research advisees**

John Franey, UT undergraduate, 1/2018-5/2019  
 Kate Grobowsky, UT undergraduate, 9/2018-5/2019  
 Jasmin Alfaro, UT undergraduate, 1/2016-5/2017.  
 Reid Ransom, UT undergraduate, 9/2016-12/2016.  
 Diane Carrico, UT undergraduate, 1/2016-5/2016.  
 John Ulkem, UT undergraduate, 1/2016-5/2016.  
 Jackie Fu, UT undergraduate, 1/2016-5/2016.  
 Todd Burack, UT undergraduate, 9/2014-8/2015.

Austin Morrell, UT undergraduate, 3/2011-8/2013.  
Sam Lillard, UT undergraduate, 5/2013-9/2013.  
Rebecca Rhodes, undergraduate at SUNY-Brockport, ESI REU program, summer 2013.  
Joel Funderburg, UT undergraduate, 10/2012-5/2013.  
Emily Finkelman, UT undergraduate, 2/2012-8/2012.  
Travis Waller, undergraduate at West Virginia University, ESI REU program, summer 2012.  
Shannon Boesch, undergraduate at Fort Lewis College, ESI REU program, summer 2011.  
Sean Sanguinito, undergraduate at SUNY Geneseo, ESI REU program, summer 2010.

### **Community, Committee, Administrative, and Educational Service**

Faculty Council Member, 9/2019-present  
Educational Policy Committee Member  
Parking and Traffic Appeals Panel Member

Provost's Teaching Fellow, member of 2019 cohort, 1/2019-present  
New Faculty Symposium volunteer, 2019.

Jackson Scholars Program co-director, 9/2018-present.

Graduate Admissions and Support Committee, Department of Geological Sciences, 9/2017- Present.

Deford lecture series committee (Spring 2019-present)

**Faculty Lead, Onramps GEO 302E: Earth Wind and Fire** (College course taught to high school students across the state of Texas), 6/2016-Present.

Associate Editor, Journal of Geophysical Research-Earth Surface, February 2016-February 2019.

DGS Ad-hoc Committee on Faculty Workload, 2/2018-11/2018.

DGS Ad-hoc Committee on calculus requirements, 10/2018-12/2018.

TNT NeoGeo trip attendee, August 2019, 2018, 2016, 2015.

Academic Committee, Graduate Assembly, University of Texas at Austin, 2/2017-5/2017.

Undergraduate Committee, Department of Geological Sciences, 9/2013-9/2018.

GSC Ad-hoc Committee on GSC Membership, chair of committee, Spring 2015.

Evaluated Jackson School Postdoctoral Fellowship applications (2011, 2012, 2013, 2014).

GSC Ad-hoc Dissertation Committee, Fall 2013.

BEG search committee for geomorphology/soils position, Spring 2012.

### **Academic Activities, Outreach and Awards**

Knebel Teaching Award, spring 2018

Co-proposed and co-chaired session at Fall AGU Meetings in 2010, 2012, 2013, 2014, 2016.

Conducted hands-on demonstrations for STEM (Science Technology Engineering and Math) Night at Allison Elementary, an Austin school which serves an underprivileged student body, Spring 2014.

Mentored a team of 5<sup>th</sup> graders from Allison Elementary, an Austin school which serves an underprivileged student body, for a competition about natural hazards and robotics, Fall 2013. The students placed 25<sup>th</sup> out of 141 teams.

UT Services for Students with Disabilities Appreciation Award, Spring 2013.

Spoke to six 2nd-grade classes at Laurel Mountain Elementary School, Austin TX, about rocks, geological time, and being a geologist, 12/09/11.

Co-organized and co-led (with Arjun Heimsath, ASU) Friends of the Pleistocene field conference to Henry Mountains, Utah. October 15-17, 2010. Approximately 100 people attended, including my UT geomorphology class.

### **Other mentions and interviews in scientific and popular media**

Lee Bassman 1/15/2019, Four points News: <http://www.fourpointsnews.com/2019/01/15/rock-slides-on-rm-2222-cant-be-predicted-rain-can-be-a-factor-in-incidents/>

Yoojin Cho, 5/16/2018, KXAN: <https://www.kxan.com/news/local/austin/cleanup-continues-after-shoal-creek-trail-landslide/1183929056>

Anders, AM (2016), How rain affects rock and rivers, *Nature*, 532, 186-187.  
News and Views commentary on Murphy et al. (2016).

Wiggington, N. (2015), Smart rocks teach river lessons, *Science*, 16 October 2015: **350** (6258), pg. 290.  
Editor's Choice for research published "This week in other journals": Brief summary highlighting the broader appeal of Olinde and Johnson (2015).

Underwood, E. (2012), How to Build a Smarter Rock, *Science*, 14 December 2012: **338** (6113), 1412-1413. doi:10.1126/science.338.6113.1412 .  
Journalism article published in Science about research by me and my PhD student.

Underwood, E. (2012), Solving the Mystery of River Formation, *Science*, "Latest News", 5 December 2012, <http://www.sciencemag.org/news/2012/12/solving-mystery-river-formation>.  
Article about a colleague's research that includes commentary and quotes from Johnson.