

# Ken L. Ferrier

Assistant professor, Georgia Institute of Technology, School of Earth and Atmospheric Sciences  
ferrier@gatech.edu <http://ferrier.eas.gatech.edu>

## EDUCATION

2009	Earth and Planetary Science, University of California, Berkeley	Ph.D.
2000	Physics, Cornell University	A.B.

## APPOINTMENTS

2014-present	Assistant professor, Georgia Tech, School of Earth and Atmospheric Sciences
2012-2014	CIFAR postdoctoral fellow, Harvard University, Dept. Earth and Planetary Sciences
2010-2012	Postdoctoral Associate, MIT, Dept. of Earth, Atmospheric, and Planetary Sciences

## PUBLICATIONS

- Ferrier KL**, Austermann J, Mitrovica JX, Pico T, in review. Incorporating sediment compaction into a gravitationally self-consistent model for global sea-level change.
- Pico T, Mitrovica JX, **Ferrier KL**, Braun J, accepted. Global ice volume during MIS 3 inferred from a sea-level analysis of sedimentary core records in the Yellow River Delta. *Quaternary Science Reviews*.
- Ferrier KL**, Riebe CS, Hahm WJ, 2016. Testing for supply-limited and kinetic-limited chemical erosion in field measurements of regolith production and chemical depletion. *Geochemistry, Geophysics, Geosystems*, doi:10.1002/2016GC006273.
- Ferrier KL**, Mitrovica JX, Giosan L, Clift PD, 2015. Sea-level responses to erosion and deposition of sediment in the Indus River basin and the Arabian Sea. *Earth and Planetary Science Letters*, v. 416, p. 12-20.
- Jefferson AJ, **Ferrier KL**, Perron JT, Ramalho R, 2014. Controls on the hydrological landscape evolution of shield volcanoes and volcanic ocean islands. In: *The Galapagos: A National Laboratory for the Earth Sciences*, AGU Geophysical Monograph 204. Eds. Harpp KS, Mittelstaedt E, d'Ozouville N, Graham DW.
- Dalca AV, **Ferrier KL**, Mitrovica JX, Perron JT, Milne GA, Creveling JR, 2013. On post-glacial sea level – III: Incorporating sediment redistribution. *Geophysical Journal International*, doi:10.1093/gji/ggt089.
- Ferrier KL**, Huppert KL, Perron JT, 2013. Climatic control of bedrock river incision. *Nature*, v. 496, p. 206-209, doi:10.1038/nature11982.
- Kirchner JW, **Ferrier KL**, 2013. Mainly in the plain. *Nature*, v. 495, p. 318-319.
- Ferrier KL**, Perron JT, Mukhopadhyay S, Rosener M, Stock JD, Huppert KL, Slosberg M, 2013. Covariation of climate and long-term erosion rates across a steep rainfall gradient on the Hawaiian island of Kaua'i. *Geological Society of America Bulletin*, doi:10.1130/B30726.1.
- Perron JT, Richardson PW, **Ferrier KL**, Lapôtre M, 2012. The root of branching river networks. *Nature*, v. 492, p. 100-103.
- Ferrier K.L.**, Kirchner J.W., Finkel R.C., 2012. Weak influences of climate and physical erosion rates on chemical erosion rates: Measurements along two altitudinal transects in the Idaho Batholith. *JGR Earth Surface*, v. 117, F02026, doi:10.1029/2011JF002231.
- Ferrier K.L.**, Kirchner J.W., Finkel R.C., 2011. Estimating millennial-scale rates of dust incorporation into eroding hillslope soils using cosmogenic nuclides and immobile weathering tracers. *JGR Earth Surface*, v. 116, F03022, doi:10.1029/2011JF001991.
- Ferrier K.L.**, Kirchner J.W., Riebe C.S., Finkel R.C., 2010. Mineral-specific chemical weathering rates over millennial timescales: Measurements at Rio Icacos, Puerto Rico. *Chemical Geology*, v. 277, p. 101-114, doi:10.1016/j.chemgeo.2010.07.013.

**Ferrier K.L.**, Kirchner J.W., 2008. Effects of physical erosion on chemical denudation rates: A numerical modeling study of soil-mantled hillslopes. *Earth and Planetary Science Letters*, v. 272, p. 591-599, doi: 10.1016/j.epsl.2008.05.024.

**Ferrier K.L.**, Kirchner J.W., Finkel R.C., August 2005. Erosion rates over millennial and decadal timescales at Caspar Creek and Redwood Creek, Northern California Coast Ranges. *Earth Surface Processes and Landforms*, v. 30, p. 1025-1038, doi: 10.1002/esp.1260.

## **HONORS**

AGU Editor's Citation for excellence in refereeing, *Journal of Geophysical Research* (2016)

CIFAR Global Scholar, Canadian Institute For Advanced Research (2012-14)

Kavli Frontiers of Science Fellow, National Academy of Sciences (2012)

AGU Outstanding Student Presentation, Fall Meeting, Hydrology Section (2008)

AGU Outstanding Student Presentation, Fall Meeting, Hydrology Section (2007)

LSP Graduate Student Fellowship, Lawrence Livermore National Laboratory (2006-09)

Graduate Student Instructor of the Year, University of California, Berkeley (2004)

## **TEACHING EXPERIENCE**

Georgia Tech, assistant professor (2014-present)

- Geomorphology (for upper level undergraduate majors and grad students, EAS 4804)
- Structural Geology (for upper level undergraduate majors and grad students, EAS 4200)
- Introduction to Environmental Sciences (for first-year majors, EAS 1600)
- Laboratory Methods for Soil Geochemistry (independent research, EAS 4699)

Boston College, adjunct professor (2012-2013)

- Cosmos (survey course for non-majors, GE 177)

San Quentin State Prison, Patten University, CA, adjunct professor (2004-2007)

- Geology, Calculus, Geometry, Algebra (for inmates in Associate of Arts program)

University of California, Berkeley, graduate student instructor (2001-2009)

- The Water Planet (survey course for non-majors, EPS 3)
- Geological Influences in California Society (first-year field course, EPS 39)
- The Planet Earth (introductory course for majors, EPS 50)
- Analysis of Environmental Data (upper-level undergraduate statistics course, EPS 120)

## **INVITED PRESENTATIONS**

2016 University of Florida, Department of Geological Sciences

Tulane University, Department of Earth and Environmental Sciences

GSA Fall Meeting, Denver, CO

EGU Annual Meeting, Vienna, Austria

CSDMS Annual Meeting, Boulder, CO

2015 University of Southern California, Department of Earth Sciences

North Carolina State University, Department of Marine, Earth, and Atmospheric Sciences

Vanderbilt University, Department of Earth and Environmental Sciences

AGU-CGU Joint Assembly, Montreal, QC

2014 University of Wyoming, Department of Geology and Geophysics (2 presentations)

Columbia University, Lamont-Doherty Earth Observatory

AGU Fall Meeting, San Francisco, CA

GSA Fall Meeting, Vancouver, BC

2013 Cornell University, Department of Earth and Atmospheric Sciences (2 presentations)

University of Minnesota, Department of Earth Sciences (2 presentations)

Georgia Tech, School of Earth and Atmospheric Sciences

AGU Fall Meeting, San Francisco, CA

- 2012 McGill University, Department of Earth and Planetary Sciences  
 Wellesley College, Geosciences Department  
 Harvard University, Solid Earth Geophysics seminar  
 Kavli Frontiers of Science Symposium, Solo, Indonesia
- 2011 Boston College, Department of Earth and Environmental Sciences  
 Wellesley College, Geosciences Department

## STUDENTS AND POSTDOCS MENTORED

### Ferrier group members

- Dr. Qi Li, postdoc (2016-present)
- Dr. Nicole West, postdoc (2015-16; now tenure-track professor, Central Michigan University)
- Amelia Winner, PhD student (2015-present)
- Riannon Colton, undergraduate researcher (2015-16)
- Johnna Floyd, undergraduate researcher (2015-16)
- Josh Garrett, undergraduate researcher (2015-16)
- Tyler Ryther, NSF-REU undergraduate researcher (summer 2016)

### Students mentored as secondary advisor (at Georgia Tech unless otherwise noted)

- Luju Ojha, PhD student of Prof. James Wray (2015-16; now postdoc, Johns Hopkins University)
- Heather Chilton, PhD student of Prof. Britney Schmidt (2015-present)
- Tamara Pico, PhD student of Prof. Jerry Mitrovica, Harvard University (2015-present)

## SERVICE AND OUTREACH

Member of executive committee, AGU Earth and Planetary Surface Processes Focus Group (2014-present)

Coordinator of Outstanding Student Presentation Awards, AGU Earth and Planetary Surface Processes Focus Group at AGU Fall Meeting (2013-2015) and AGU-CGU Joint Assembly (2015)

Web editor, AGU Earth and Planetary Surface Processes Focus Group (2012-2014)

Guest geologist at public schools: Northwood Elementary School, Roswell, GA; Cabot Elementary School, Newton, MA; British School of Boston, MA (2011-present)

Reviewer (12-15 per year) for American Journal of Science, Applied Geochemistry, Catena, Earth and Planetary Science Letters, Earth Surface Dynamics, Earth Surface Processes and Landforms, Elements, G-cubed, Geochimica et Cosmochimica Acta, Geoderma, Geology, Geomorphology, Geophysical Research Letters, GSA Bulletin, Journal of Geophysical Research-Earth Surface, Nature, Nature Geoscience, NSF-GLD, NSF-GLTG, Science, Science Advances, US Army Research Office

Adjunct professor, San Quentin State Prison, Patten University (2004-2007)

## SELECTED CONFERENCE ABSTRACTS AND PROCEEDINGS (LAST 2 YEARS)

**Ferrier KL**, West N, 2016. Effects of transient perturbations in physical erosion rate on modeled chemical erosion rates. AGU Fall Meeting, San Francisco, CA.

Huppert K, Perron JT, **Ferrier KL**, Mukhopadhyay S, Rosener M, Douglas M, 2016. Erosion of volcanic ocean islands: insights from modeling, topographic analyses, and cosmogenic exposure dating. AGU Fall Meeting, San Francisco, CA.

MacDonald LH, Miles MW, House MR, Belmont P, **Ferrier KL**, 2016. Evaluating sediment sources in the Upper Elk River watershed, northwestern California: Logging and roads vs. natural sources. AGU Fall Meeting, San Francisco, CA.

Pico T, Mitrovica JX, **Ferrier KL**, Braun J, 2016. Coupling landscapes to solid-Earth deformation over the ice age. AGU Fall Meeting, San Francisco, CA.

West N, **Ferrier KL**, 2016. Testing the control of mineral supply rates on chemical weathering in the Klamath Mountains. AGU Fall Meeting, San Francisco, CA.

Winner A, **Ferrier KL**, Dufek J, 2016. Experimental determination of bed conditions in

- concentrated pyroclastic density currents. AGU Fall Meeting, San Francisco, CA.
- West N, **Ferrier KL**, 2016. Testing the control of mineral supply rates on chemical weathering in the Klamath Mountains. GSA Fall Meeting, Denver, CO.
- Chilton H, Schmidt BE, Hughson KHG, Scully JEC, Nathues A, Platz T, **Ferrier KL**, Russell CT, Raymond CA, 2016. The role of ice in Ceres' surface flows, landslides, and mass wasting. GSA Fall Meeting, Denver, CO.
- MacDonald LH, Miles MW, Beach S, Harrison N, House MR, Belmont P, **Ferrier KL**, 2016. Development and implications of a sediment budget for the Upper Elk River watershed, Humboldt County. Redwood Sciences Symposium, Eureka, CA, September 2016.
- Winner A, **Ferrier KL**, Dufek J, 2016. Investigating bed erosion from pyroclastic density currents. CSDMS Annual Meeting, Boulder, CO.
- Ferrier KL**, Mitrovica JX, 2015. Incorporating sediment compaction into a gravitationally self-consistent model for global sea-level change. AGU Fall Meeting, San Francisco, CA.
- Pico T, Mitrovica JX, **Ferrier KL**, 2015. Exploiting sedimentation datasets to model the impact of sediment loading on sea level at the Yellow River Delta. AGU Fall Meeting, San Francisco, CA.
- Pico T, Mitrovica JX, **Ferrier KL**, 2015. Sediment loading at the Yellow River Delta: Modeling depositional dynamics and impact on regional sea level. GSA Fall Meeting, Baltimore, MD.