

J. Taylor Perron

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DEGREES

PhD, Earth & Planetary Science, University of California, Berkeley, 2006
AB, Earth & Planetary Sciences and Archaeology, Harvard University, 1999

APPOINTMENTS

2019– Professor, Massachusetts Institute of Technology
2014–2018 Associate Professor, Massachusetts Institute of Technology
2009–2013 Assistant Professor, Massachusetts Institute of Technology
2007–2008 R. A. Daly Postdoctoral Fellow, Harvard University
2000–2006 Research and Teaching Assistant, UC Berkeley
1999–2000 Intern, U. S. Geological Survey

AWARDS AND HONORS

MacArthur Foundation Fellowship, 2021
James B. Macelwane Medal, American Geophysical Union, 2014
Fellow of the American Geophysical Union, 2014
Clint Slatton Award, National Center for Airborne Laser Mapping, 2013
Robert P. Sharp Lecturer, American Geophysical Union, 2011
Luna B. Leopold Early Career Award, American Geophysical Union, 2011
Fellow of the Canadian Institute for Advanced Research, 2010
Kavli Frontiers of Science Fellow, National Academy of Sciences, 2007
National Science Foundation Graduate Fellowship, 2002–2005
Hoopes Thesis Prize, Harvard University, 1999
National Merit Scholar, 1995

UNIVERSITY SERVICE

Leadership EAPS Associate Department Head for Education, 2018–2021
EAPS Task Force 2023 Steering Committee, 2019–2020
Group Lead, EAPS Geology, Geochemistry & Geobiology, 2014–2018
Chair, EAPS Crosby Committee, 2013–2018

Committees MIT Faculty Committee on Student Life, 2015–2018
 MIT Faculty Subcommittee on the Communication Requirement, 2015
 MIT-WHOI Joint Committee on Geology & Geophysics, 2013–present
 Selection Committee, Martin Fellowship for Sustainability, 2015–2020
 EAPS Undergraduate Education Committee, 2012–2014
 EAPS Graduate Education Committee, 2009–2012

Academics First-year Advisor, 2014–2021
 Experimental Study Group Advisor, 2014–2019
 Undergraduate Advisor, 2009–present

OTHER PROFESSIONAL SERVICE

Editorial Editorial Advisory Board, *Earth Surface Processes & Landforms*, 2014–
 Editorial Committee, *Annual Review of Earth & Planetary Sciences*,
 2017–

Reviewing *Journal reviews*: Nature, Science, PNAS, Annual Review of Earth &
 Planetary Science, Advances in Water Resources, American Journal of
 Science, Bulletin of the Seismological Society of America, Earth &
 Planetary Science Letters, Earth Surface Dynamics, Earth Surface
 Processes & Landforms, Geology, Geomorphology, Geophysical Research
 Letters, Geosphere, Hydrological Processes, Icarus, Journal of Geology,
 Journal of Geophysical Research (Earth Surface, Planets, and
 Biogeosciences), Nature Communications, Nature Geoscience, PNAS,
 Science Advances, Space Science Reviews, and Water Resources
 Research

Proposal reviews and review panels: NSF (Earth Sciences, Ocean
 Sciences, Office of Polar Programs/Antarctic Earth Sciences,
 Instrumentation & Facilities), DOE, NASA (Mars Data Analysis, Cassini
 Data Analysis, Planetary Geology & Geophysics, Mars Fundamental
 Research, Outer Planets Research, Lunar Science), US Army Research
 Office, American Chemical Society, European Science Foundation, Swiss
 National Science Foundation, Netherlands Space Office, US-Israel Bi-
 National Science Foundation

Committees Steering committee, NSF-supported National Center for Airborne Laser
 Mapping (NCALM), 2009–2012; Chair, 2011–2012

ADVISING

Undergraduate Researchers

Jennifer Hamon	2009–2010	<i>thesis advisor</i>
Jocelyn Fuentes	2010	
Mathieu Lapôtre	2010	
Abigail Koss	2009–2012	

Kimberly Huppert	2010–2011	
Michelle Slosberg	2011	<i>thesis advisor</i>
Kathryn Materna	2012–2014	
Melody Liu	2012	
Madison Douglas	2013–2016	<i>thesis advisor</i>
Elizabeth Bailey	2013–2014	
Ian Chesser	2013	
Naomi Schurr	2013–2014	<i>thesis advisor</i>
Matt Rushlow	2016–2020	<i>thesis advisor</i>
Madonna Yoder	2017	<i>thesis advisor</i>
Jade Fischer	2019	
Luiz Leal	2019	
Dri Tattersfield	2020	<i>thesis advisor</i>
Aviva Intveld	2020	
Pratistha Timilsina	2021	

Graduate Students (* = co-advised)

Terry Blackburn*	PhD 2012
Ben Black*	PhD 2013
Michael Toomey*	PhD 2013
Michael Sori*	PhD 2014
Paul Richardson	PhD 2015
Alan Richardson*	PhD 2015
Jaap Nienhuis*	PhD 2015
Kimberly Huppert	PhD 2017
James Bramante*	PhD 2019
Maya Stokes	PhD 2021
Sam Goldberg	PhD 2021
Rose Palermo*	2016–
Santiago Benavides*	2018–
Una Schneck	2020–
Megan Gillen*	2020–
Rola Dbouk*	2020–
Hendrik Lenferink*	MS 2012
Mirna Slim	MS 2012
Yodit Tewelde*	MS 2013

Postdoctoral Researchers

Ken Ferrier	2010–2012
Justin Kao	2011–2012
Scott McCoy	2012–2013
Dino Bellugi	2012–2015
Giulio Mariotti	2012–2014
Seulgi Moon	2013–2015
Eric Deal	2017–2019
Morgan Schmidt	2018–2021

Paul Corlies 2020–
 Sam Birch 2020–
 Nicolás Pérez-Consuegra 2021–

 PUBLICATIONS

* = student or postdoc advisee

- *Birch, S.P.D., G. Parker, *P. Corlies, J.M. Soderblom, J.W. Miller, *R.V. Palermo, J.M. Lora, A.D. Ashton, A.G. Hayes, and J.T. Perron. Reconstructing river flows remotely on Earth, Titan, and Mars. In review.
- *Schmidt, M., *S.L. Goldberg, (24 others), and J.T. Perron. Intentional creation of carbon-rich soils in the ancient Amazon. In review.
- *Stokes, M.F., I.J. Larsen, *S.L. Goldberg, S.W. McCoy, P. Prince, and J.T. Perron. The Erosional Signature of Drainage Divide Motion Along the Blue Ridge Escarpment. In review.
- Zhang, Q., *E.A. Deal, J.T. Perron, J.G. Venditti, *S.J. Benavides, *M. Rushlow and K. Kamrin. Fluid-driven transport of round sediment particles: from discrete simulations to continuum modeling. In review.
- *Deal, E.A., J.G. Venditti, *S.J. Benavides, R. Bradley, Q. Zhang, K. Kamrin, and J.T. Perron. Grain shape effects in bed load sediment transport. In review.
- *Goldberg, S.L., *M.F. Stokes, and J.T. Perron. Climate modulates the influence of rock type on bedrock river incision. In review.
- *Benavides, S.J., *E.A. Deal, *M. Rushlow, J.G. Venditti, Q. Zhang, K. Kamrin, and J.T. Perron (2022). The impact of intermittency on bed load sediment transport. *Geophysical Research Letters*, 49, e2021GL096088. <https://doi.org/10.1029/2021GL096088>.
- *Goldberg, S.L., *M.J. Schmidt and J.T. Perron (2021). Fast response of Amazon rivers to Quaternary climate cycles. *Journal of Geophysical Research: Earth Surface*, 126, e2021JF006416. <https://doi.org/10.1029/2021JF006416>.
- Miller, J.W., S.P.D. Birch, A.G. Hayes, M.J. Malaska, R.M.C. Lopes, A.M. Schoenfeld, P.M. Corlies, D.M. Burr, T.G. Farr and J.T. Perron (2021). Fluvial Features on Titan and Earth: Lessons from Planform Images in Low-resolution SAR. *The Planetary Science Journal*, 2, 142, <https://doi.org/10.3847/PSJ/ac0245>.
- Moon, S., J.T. Perron, S.J. Martel, B.W. Goodfellow, D. Mas Ivars, A. Simeonov, R. Munier, J.-O. Näslund, A. Hall, A.P. Stroeven, K. Ebert and J. Heyman (2020). Present-day stress field influences bedrock fracture openness in the deep subsurface. *Geophys. Res. Lett.*, 47, e2020GL090581, <http://doi.org/10.1029/2020GL090581>.
- Ferrier, K.L. and J.T. Perron (2020) The importance of hillslope scale in responses of chemical erosion rate to changes in tectonics and climate. *J. Geophys. Res.*, 125,

e2020JF005562, <http://doi.org/10.1029/2020JF005562>.

- *Stokes, M.F. and J.T. Perron (2020). Modeling the evolution of aquatic organisms in dynamic river basins. *J. Geophys. Res.*, 125, e2020JF005652. <http://doi.org/10.1029/2020JF005652>.
- *Richardson, P.W., J.T. Perron, S.R. Miller and J.W. Kirchner (2020). Unraveling the mysteries of asymmetric topography at Gabilan Mesa, California. *J. Geophys. Res.*, 125, e2019JF005378, <http://doi.org/10.1029/2019JF005378>.
- *Richardson, P.W., J.T. Perron, S.R. Miller and J.W. Kirchner (2020). Modeling the formation of topographic asymmetry by aspect-dependent erosional processes and lateral channel migration. *J. Geophys. Res.*, 125, e2019JF005377, <http://doi.org/10.1029/2019JF005377>.
- Daudon, C., A. Lucas, S. Rodriguez, S. Jacquemoud, A. Escalante Lopez, B. Grieger, E. Howington-Kraus, E. Karkoschka, R.L. Kirk, J.T. Perron, J.M. Soderblom, M. Costa. Daudon, C., Lucas, A., Rodriguez, S., Jacquemoud, S., Escalante López, A., Grieger, B., et al. (2020). A new digital terrain model of the Huygens landing site on Saturn's largest moon, Titan. *Earth and Space Science*, 7, e2020EA001127, <http://doi.org/10.1029/2020EA001127>.
- Jin, C., G. Coco R. Tinoco, J. T. Perron, P. M. Myrow, K. L. Huppert, H. Friedrich, E. B. Goldstein, Z. Gongh (2020). Investigating the response of wave-generated ripples to changes in wave forcing. *Geomorphology*, 363, <http://doi.org/10.1016/j.geomorph.2020.107229>.
- *Bramante, J.F., J.T. Perron, A.D. Ashton and J.P. Donnelly (2020). Experimental quantification of bedrock abrasion under oscillatory flow. *Geology*, 48, 541–545, <http://doi.org/10.1130/G47089.1>.
- *Huppert, K.L., J.T. Perron and A.D. Ashton (2020). The influence of wave power on bedrock seacliff erosion in the Hawaiian Islands. *Geology*, 48, 499–503, <http://doi.org/10.1130/G47113.1>.
- *Huppert, K.L., J.T. Perron and L.H. Royden (2020). Hotspot swells and the lifespan of volcanic ocean islands. *Science Advances*, 6, eaaw6906, <http://doi.org/10.1126/sciadv.aaw6906>.
- *Pico, T., J.X. Mitrovica, J.T. Perron, K.L. Ferrier and J. Braun (2019). Influence of glacial isostatic adjustment on river evolution along the U.S. mid-Atlantic coast. *EPSL*, 522, 176-185, <http://doi.org/10.1016/j.epsl.2019.06.026>.
- *Richardson, P.W., J.T. Perron and *N.D. Schurr (2019). Influences of climate and life on hillslope sediment transport. *Geology*, 47, 423-426, <http://doi.org/10.1130/G45305.1>.
- Perron, J.T., P. Myrow, *K.L. Huppert, *A. Koss and A. Wickert (2018). Ancient record of changing flows from wave ripple defects. *Geology*, 46, 875-878, <http://doi.org/10.1130/G45463.1>.

- Myrow, P., D. Jerolmack and J.T. Perron (2018). Bedform disequilibrium. *Sedimentology*, 88, 1096-1113, <http://doi.org/10.2110/jsr.2018.55>.
- *Chan, N.-H., J.T. Perron, J.X. Mitrovica and N.A. Gomez (2018). New Evidence of an Ancient Martian Ocean from the Global Distribution of Valley Networks. *JGR Planets*, 123, 2138-2150, <http://doi.org/10.1029/2018JE005536>.
- Blackburn, T., K.L. Ferrier and J.T. Perron (2018). Coupled feedbacks between mountain erosion rate, elevation, crustal temperature, and density. *EPSL*, 498, 377-386, <http://doi.org/10.1016/j.epsl.2018.07.003>.
- *Stokes, M.F., *S.L. Goldberg and J.T. Perron (2018). Ongoing river capture in the Amazon. *Geophys. Res. Lett.*, 45, 5545-5552, <http://doi.org/10.1029/2018GL078129.65>.
- Black, B.A., J.T. Perron, D. Hemingway, E. Bailey, F. Nimmo and H. Zebker (2017). Global drainage patterns and the origins of topographic relief on Earth, Mars, and Titan. *Science*, 356, 727–731, <http://doi.org/10.1126/science.aag0171>.
- *Moon, S., J. T. Perron, S. Martel, W.S. Holbrook and J. St Clair (2017). A model of three-dimensional topographic stresses with implications for bedrock fractures, surface processes and landscape evolution. *J. Geophys. Res.*, 122, 823-846, <http://doi.org/10.1002/2016JF004155>.
- Perron, J.T. (2017). Climate and the pace of erosional landscape evolution. *Annual Review of Earth and Planetary Sciences*, 45, 561-591, <http://doi.org/10.1146/annurev-earth-060614-105405>.
- Perron, J.T. and J.G. Venditti (2017). Megafloods Downsized. *Nature*, 538, 174–175, <http://doi.org/10.1038/538174a>.
- Gabet, E.J., J.L.H. Burnham and J.T. Perron (2016), Critiques of the seismic hypothesis and the vegetation stabilization hypothesis for the formation of Mima mounds along the western coast of the US, *Geomorphology*, 269, 40–42, <http://doi.org/10.1016/j.geomorph.2016.06.032>.
- Toomey, M.R., M.E. Raymo, A.D. Ashton and J.T. Perron (2016), Late Cenozoic sea level and the rise of modern rimmed atolls, *Palaeogeography, Palaeoclimatology, Palaeoecology*, 451, 73–83, <http://doi.org/10.1016/j.palaeo.2016.03.018>.
- Toomey, M.R., J.D. Woodruff, J.P. Donnelly, A.D. Ashton and J.T. Perron (2016), Seismic evidence of glacial-age river incision into the Tahaa barrier reef, French Polynesia, *Marine Geology*, 380, 284–289, <http://doi.org/10.1016/j.margeo.2016.04.008>.
- *Mariotti, G., S. Pruss, X. Ai, J.T. Perron and T. Bosak (2016). Microbial origin of early animal trace fossils? *J. Sedimentary Research*, 86, 287–293, <http://doi.org/10.2110/jsr.2016.19>.
- St. Clair, J., *S. Moon, W.S. Holbrook, J.T. Perron, C.S. Riebe, S.J. Martel, B. Carr, C. Harmon, K. Singha and D. deB. Richter (2015). Geophysical imaging reveals

- topographic stress control of bedrock weathering, *Science*, 350, 534–538, <http://doi.org/10.1126/science.aab2210>.
- *Bellugi, D., D. Milledge, W.E. Dietrich, J.T. Perron and J. McKean (2015), Predicting shallow landslide size and location across a natural landscape: Application of a spectral clustering search algorithm, *J. Geophys. Res.*, <http://doi.org/10.1002/2015JF003520>.
- *Huppert, K.L., L.H. Royden and J.T. Perron (2015), Dominant influence of volcanic loading on vertical motions of the Hawaiian Islands, *EPSL*, 418, 149–171, <http://doi.org/10.1016/j.epsl.2015.02.027>.
- Perron, J.T. (2015). The wind in the hollows. *Nature Geosci.*, 8, 254–255, <http://doi.org/10.1038/ngeo2389>.
- *Bellugi, D., D. Milledge, W.E. Dietrich, J. McKean, J.T. Perron, E. Sudderth and B. Kazian (2015), A spectral clustering search algorithm for predicting shallow landslide size and location, *J. Geophys. Res.*, 120, 300–324, <http://doi.org/10.1002/2014JF003137>.
- *Slim, M., J.T. Perron, S.J. Martel and K. Singha (2015), Topographic stress and rock fracture: A two-dimensional numerical model for arbitrary surface topography and comparisons with borehole observations. *Earth Surface Processes and Landforms*, 40, 512–529, <http://doi.org/10.1002/esp.3646>.
- *Nienhuis, J.H., J.T. Perron, *J.C.T. Kao and P.M. Myrow (2014), Wavelength selection and symmetry breaking in orbital wave ripples, *J. Geophys. Res.*, 119, 2239–2257, <http://doi.org/10.1002/2014JF003158>.
- *Mariotti, G., S. Pruss, J.T. Perron and T. Bosak (2014), Microbial shaping of sedimentary wrinkle structures, *Nature Geoscience*, 7, 736–740, <http://doi.org/10.1038/ngeo2229>.
- *Richardson, A., C. Hill and J.T. Perron (2014), IDA: An implicit, parallelizable method for calculating drainage area. *Water Resources Research*, 50, 4110–4130, <http://doi.org/10.1002/2013WR014326>.
- *Mariotti, G., J.T. Perron and T. Bosak (2014), Feedbacks between flow, sediment motion and microbial growth on sand bars initiate and shape elongated stromatolite mounds. *EPSL*, 397, 93–100, <http://doi.org/10.1016/j.epsl.2014.04.036>.
- *Sori, M., J.T. Perron, P. Huybers and O. Aharonson (2014), A procedure for testing the significance of orbital tuning of the Martian polar layered deposits. *Icarus*, 235, 136–146, <http://doi.org/10.1016/j.icarus.2014.03.009>.
- Willett, S.D., *S.W. McCoy, J.T. Perron, L. Goren and C.Y. Chen (2014), Dynamic reorganization of river basins. *Science*, 343 (6175), 1248765, <http://doi.org/10.1126/science.1248765>.
- Jefferson, A.J., *K.L. Ferrier, J.T. Perron, and R. Ramalho (2014), Controls on the Hydrological and Topographic Evolution of Shield Volcanoes and Volcanic Ocean

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- Gabet, E.J., J.T. Perron and D.L. Johnson (2014), Biotic origin for Mima mounds supported by numerical model. *Geomorphology*, 206, 58–66, <http://doi.org/10.1016/j.geomorph.2013.09.018>.
- Aharonson, O., A.G. Hayes, R. Lopes, A. Lucas, P. Hayne and J.T. Perron (2014), Titan's Surface Geology. In *Titan: Interior, Surface, Atmosphere and Space Environment*, edited by I. Mueller-Wodarg, C. Griffith, E. Lellouch, and T. Cravens, Cambridge University Press, ISBN:9780521199926, 63–101. <https://doi.org/10.1017/CBO9780511667398.005>
- Bosak, T., *G. Mariotti, F.A. Macdonald, J.T. Perron and S.B. Pruss (2013), Microbial sedimentology of stromatolites in Neoproterozoic cap carbonates. In *Ecosystem Paleobiology and Geobiology, Paleontological Special Papers Volume 19*, Volume 19, A.M. Bush, S.B. Pruss, and J.L. Payne (eds.), 51–75. <https://doi.org/10.1017/S1089332600002680>
- *Tewelde, Y., J.T. Perron, P.G. Ford, S.R. Miller and *B.A. Black (2013), Estimates of fluvial erosion on Titan from sinuosity of lake shorelines. *J. Geophys. Res.*, 118, 2198–2212, <http://doi.org/10.1002/jgre.20153>.
- Burr, D.M., S.A. Drummond, R. Cartwright, *B.A. Black and J.T. Perron (2013), Morphology of fluvial features on Titan: Evidence for structural control. *Icarus*, 226, 742–759, <http://doi.org/10.1016/j.icarus.2013.06.016>.
- *Ferrier, K.L., *K.L. Huppert and J.T. Perron (2013), Climatic control of bedrock river incision. *Nature*, 496, 206–209, <http://doi.org/10.1038/nature11982>.
- *Toomey, M., A.D. Ashton and J.T. Perron (2013), Profiles of ocean island coral reefs controlled by sea-level history and carbonate accumulation rates. *Geology*, 41, 731–734, <http://doi.org/10.1130/G34109.1>.
- Dalca, A.V., K.L. Ferrier, J.X. Mitrovica, J.T. Perron, G.A. Milne, and J.R. Creveling (2013), On post-glacial sea level, III: Incorporating sediment redistribution. *Geophys. J. Int.*, 194, 45–60, <http://doi.org/10.1093/gji/ggt089>.
- *Ferrier, K.L., J.T. Perron, S. Mukhopadhyay, M. Rosener, J.D. Stock, *K.L. Huppert and *M. Slosberg (2013), Covariation of climate and long-term erosion rates across a steep rainfall gradient on the Hawaiian island of Kaua'i. *GSA Bulletin*, 125, 1146–1163, <http://doi.org/10.1130/B30726.1>.
- Royden, L. and J.T. Perron (2013), Solutions of the stream power equation and application to the evolution of river longitudinal profiles. *J. Geophys. Res.*, 118, 497–518, <http://doi.org/10.1002/jgrf.20031>.
- Perron, J.T. and L. Royden (2013), An integral approach to bedrock river profile analysis. *Earth Surface Processes and Landforms*, 38, 570–576, <http://doi.org/10.1002/esp.3302>.

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- Perron, J.T., *P.W. Richardson, *K.L. Ferrier, and *M. Lapôtre (2012), The root of branching river networks. *Nature*, 492, 100–103, <http://doi.org/10.1038/nature11672>.
- Lee, J.-E., B.R. Lintner, J.D. Neelin, X. Jiang, C.K. Boyce, J.B. Fisher, J.T. Perron, T.L. Kubar, R.T. Pierrehumbert, J. Lee and J. Worden (2012), Reduction of tropical land region precipitation variability via transpiration. *Geophys. Res. Lett.*, 39, L19704, <http://doi.org/10.1029/2012GL053417>.
- *Black, B.A., J.T. Perron, D.M. Burr and S.L. Drummond (2012), Estimating erosional exhumation on Titan from drainage network morphology. *J. Geophys. Res.*, 117, E08006, <http://doi.org/10.1029/2012JE004085>.
- Limaye, A.B.S., O. Aharonson and J.T. Perron (2012), Detailed stratigraphy and bed thickness of the Mars north and south polar layered deposits. *J. Geophys. Res.*, 117, E06009, <http://doi.org/10.1029/2011JE003961>.
- Lamb, M.P., W.W. Fischer, T.D. Raub, J.T. Perron and P.M. Myrow (2012), Origin of giant wave ripples in Snowball Earth cap carbonate. *Geology*, 40, 827–830, <http://doi.org/10.1130/G33093.1>.
- Pelletier, J.D. and J.T. Perron (2012), Analytic solution for the morphology of a soil-mantled valley undergoing steady headward growth: Validation using case studies in southeastern Arizona. *J. Geophys. Res.*, 117, F02018, <http://doi.org/10.1029/2011JF002281>.
- Perron, J.T. and *J. Hamon (2012), Equilibrium form of horizontally retreating, soil-mantled hill-slopes: Model development and application to a groundwater sapping landscape. *J. Geophys. Res.*, 117, F01027, <http://doi.org/10.1029/2011JF002139>.
- *Blackburn, T.J., S.A. Bowring, J.T. Perron, K.H. Mahan, F.O. Dudas and K.R. Barnhart (2012), An exhumation history of continents over billion-year time scales. *Science*, 335, 73–76, <http://doi.org/10.1126/science.1213496>.
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- Perron, J.T. (2011), Numerical methods for nonlinear hillslope transport laws. *J. Geophys. Res.*, 116, F02021, <http://doi.org/10.1029/2010JF001801>.
- Perron, J.T., J.W. Kirchner and W.E. Dietrich (2009), Formation of evenly spaced ridges and valleys. *Nature*, 460, 502–505, <http://doi.org/10.1038/nature08174>.
- Booth, A., J. Roering and J.T. Perron (2009), Automated landslide mapping using spectral analysis and high-resolution topographic data: Puget Sound lowlands,

- Washington, and Portland Hills, Oregon. *Geomorphology*, 109, 132–147, <http://doi.org/10.1016/j.geomorph.2009.02.027>.
- Perron, J.T. and P. Huybers (2009), Is there an orbital signal in the polar layered deposits on Mars? *Geology*, 37, 155–158, <http://doi.org/10.1130/G25143A.1>.
- Kite, E.S., I. Matsuyama, M. Manga, J.T. Perron and J.X. Mitrovica (2009), True polar wander driven by late-stage volcanism and the distribution of paleopolar deposits on Mars. *EPSL*, 280, 254–267, <http://doi.org/10.1016/j.epsl.2009.01.040>.
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