

BRIAN K. HORTON

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Education Ph.D., Geosciences, University of Arizona, 1998
 M.S., Earth Sciences, Montana State University, 1994
 B.S., Geology (with distinction), University of New Mexico, 1992

Professional Positions

2006 – present Associate Professor, University of Texas at Austin (UT)
 2001 – 2006 Assistant Professor, University of California, Los Angeles (UCLA)
 1999 – 2001 Assistant Professor, Louisiana State University (LSU)

Research Interests

Evolution of contractional orogenic belts and foreland, hinterland, and intermontane basins
 Initial mountain building and plateau construction in the Andes, Tibet, and Middle East
 Sediment provenance and routing systems
 Influence of tectonics and climate on erosion, sedimentation, and basin evolution
 Integration of geochronology, thermochronology, and paleoaltimetry with basin analysis
 Physical sedimentology of modern and ancient fluvial and alluvial-fan depositional systems

Honors and Awards

Alexander von Humboldt Foundation Research Fellowship, Germany, 2006-2007
 Fellow, Geological Society of America, 2005
 Geological Society of America Young Scientist Award (Donath Medal), 2004
 UCLA Faculty Career Development Award, 2004
 National Science Foundation Postdoctoral Research Fellowship, 1998-1999
 Outstanding Teaching Assistant, University of Arizona Department of Geosciences, 1997-1998
 Award for Meritorious Performance in Teaching, University of Arizona Foundation, 1997-1998
 National Science Foundation Graduate Research Fellowship, 1993-1996
 Geological Society of America Outstanding Student Research Award, 1993
 National Science Foundation Graduate Research Fellowship, Honorable Mention, 1992

Graduate Student Supervision

Current Ph.D. advisees / co-advisees (7): Veronica Anderson, Rocio Bernal, Meredith Bush, Mariya Levina, Renas Mohammed, Nicholas Perez, Sebastián Ramírez
 Current M.S. advisees (3): Amanda Calle, Justin Fitch, William Woodruff
 Benjamin Siks, M.S. 2011, UT (now at BP, Anchorage, Alaska)
 Alejandro Bande, M.S. 2010, UT (now Ph.D. student at University of Potsdam, Germany)
 Christopher Moreno, M.S. 2010, UT (now at Mack Energy Corporation, Fort Worth, Texas)
 Paola Cardona, M.S. 2009, UT (co-supervised; now at Ecopetrol, Colombia)
 Glen Mackey, M.S. 2009, UT (co-supervised; now Ph.D. student at University of Utah)
 Yann Gavillot, M.S. 2007, UCLA (co-supervised; now Ph.D. student at Oregon State University)
 Melissa Giovanni, Ph.D. 2007, UCLA (now Instructor (Tenure Track), University of Calgary)
 Jesse Mosolf, M.S. 2007, UCLA (now Ph.D. student at University of California Santa Barbara)
 Bryan Murray, M.S. 2007, UCLA (now Ph.D. student at University of California Santa Barbara)
 Catherine Shirvell, M.S. 2006, UCLA (now at ExxonMobil, Houston, Texas)
 Matthew Bourke, M.S. 2005, UCLA (now at ExxonMobil, Houston, Texas)
 Robert Gillis, M.S. 2005, UCLA (now at Alaska Division of Geological and Geophysical Surveys)
 Richard Fink, M.S. 2002, LSU (now at ExxonMobil, Houston, Texas)
 Brian Hampton, M.S. 2002, LSU (now Assistant Professor, Michigan State University)

Professional Affiliations

Geological Society of America (Fellow) American Geophysical Union
 American Association of Petroleum Geologists SEPM (Society for Sedimentary Geology)
 International Association of Sedimentologists Sigma Xi

Research Grants

- [18] Evaluating along-strike variations in surface uplift of the Andes: Constraints from molecular paleoaltimetry in the Eastern Cordillera of Colombia. National Science Foundation Tectonics Program, 9/2010-8/2012 (2 years). Co-PI: T. Shanahan (UT).
- [17] Collaborative Research: St. Elias Erosion-tectonics Project (STEEP). National Science Foundation Continental Dynamics Program, 9/2010-8/2012 (2 years). Co-PIs: T. Pavlis (UTEP); S. Gulick, G. Christeson, H. van Avendonk (UT); and 10 others.
- [16] CAUGHT: Central Andean Uplift and the Geodynamics of High Topography. National Science Foundation Continental Dynamics Program, 6/2009-5/2013 (4 years). Co-PIs: C. Garzione (University of Rochester); 8 others.
- [15] Basin evolution and structural history of a regional transect through the Middle Magdalena Valley, Eastern Cordillera, and western Llanos basin of Colombia. Ecopetrol (Instituto Colombiano del Petróleo), 9/2008-12/2010 (2 years).
- [14] Collaborative Research: Development of extensional systems in regions of hot, thick crust: Insight from Tibet. National Science Foundation Tectonics Program, 8/2008-7/2010 (2 years). Co-PI: M. Taylor (University of Kansas); P. Kapp (University of Arizona).
- [13] Acquisition of a solid-state 193-nm laser-ablation system. National Science Foundation Instrumentation and Facilities Program, 9/2007-8/2008 (1 year). Co-PIs: W. Carlson and 3 others (UT).
- [12] Collaborative Research: Stratigraphic signatures of orogeny: Assessing the timing of initial Andean crustal shortening. National Science Foundation Tectonics Program, 7/2007-6/2010 (3 years). Co-PIs: P. DeCelles (University of Arizona); B. Carrapa (University of Wyoming).
- [11] Collaborative Research: How is rifting exhuming the youngest HP/UHP rocks on Earth? National Science Foundation Continental Dynamics Program, 7/2007-6/2012 (5 years). Co-PIs: S. Baldwin (Syracuse University); P. Mann (UT); 7 others.
- [10] Orographic barriers and climate change in the northern Puna plateau, central Andes, Argentina. Alexander von Humboldt Foundation (Germany) Research Fellowship, 8/2006-8/2007. Host: M. Strecker, University of Potsdam.
- [9] Tectonic and climatic controls on rapid exhumation along the Altiplano-Eastern Cordillera boundary, Bolivia. National Science Foundation Tectonics Program 7/2005-6/2008 (3 years).
- [8] Kinematic linkages among extrusion, fold-thrust shortening, and foreland basin evolution during early continental collision, Zagros Mountains, Iran. National Science Foundation Tectonics Program, 1/2004-12/2007 (3 years). Co-PI: G. Axen, New Mexico Tech.
- [7] Collaborative Research: Detachment faulting and basin development in a convergent setting: The Cordillera Blanca, Peru. National Science Foundation Tectonics Program, 1/2002-12/2004 (3 years). Co-PI: B. McNulty (California State University, Dominguez Hills).
- [6] Collaborative Research: Investigation of timing and strain magnitude of Late Cretaceous-Tertiary thrusting in central and northern Tibet. National Science Foundation Tectonics Program, 7/2001-6/2004 (3 years). Co-PIs: A. Yin and T.M. Harrison (UCLA).
- [5] Linking basin development and growth of continental plateaus: Controls on stratigraphic architecture in western China. American Chemical Society (Petroleum Research Fund), 8/2001-7/2003 (2 years).
- [4] Paleogene sedimentary basin development in the Bolivian Altiplano and implications for initial mountain building in the central Andes. National Science Foundation Sedimentary Geology Program, 5/2000-12/2002 (2 years).
- [3] Collaborative Research: 3-D kinematic evolution of the Charleston-Nebo salient, Sevier fold-thrust belt. National Science Foundation Tectonics Program 10/1999-6/2003 (3 years). Co-PIs: P. DeCelles and K. Constenius, (University of Arizona).
- [2] Collaborative Research: Late Cretaceous-Tertiary foreland basin evolution in the Eastern Cordillera of southern Bolivia. National Science Foundation subcontract, 5/1999-4/2000 (1 year). PIs: P. DeCelles (University of Arizona); P. Copeland (University of Houston).
- [1] Structural-stratigraphic evolution of the Fenghuo Shan and implications for crustal thickening and uplift of the Tibetan plateau, National Science Foundation Postdoctoral fellowship, 7/1998-9/1999, Sponsor: A. Yin, UCLA.

Peer-Reviewed Publications

†† = graduate student advisee; † = graduate student author; §§ = postdoctoral advisee; § = postdoctoral author.

- [52] §§Nie, J., **Horton, B.K.**, §§Saylor, J.E., Mora, A., Mange, M., Garziona, C.N., Basu, A., ††Moreno, C.J., †Caballero, V., and §§Parra, M., *in press*, Integrated provenance analysis of a convergent retroarc foreland system: U-Pb ages, heavy minerals, Nd isotopes, and sandstone compositions of the Middle Magdalena Valley basin, northern Andes, Colombia: Earth-Science Reviews.
- [51] ††Siks, B.C., and **Horton, B.K.**, *in press*, Growth and fragmentation of the Andean foreland basin during eastward advance of fold-thrust deformation, Puna plateau and Eastern Cordillera, northern Argentina: Tectonics.
- [50] DeCelles, P.G., Carrapa, B., **Horton, B.K.**, and Gehrels, G.E., *in press*, Cenozoic foreland basin system in the central Andes of northwestern Argentina: Implications for Andean geodynamics and modes of deformation: Tectonics.
- [49] §§Parra, M., Mora, A., Lopez, C., Rojas, L.E., and **Horton, B.K.**, *in press*, Detecting earliest shortening and deformation advance in thrust-belt hinterlands: Example from the Colombian Andes: Geology.
- [48] ††Mackey, G.N., **Horton, B.K.**, and Milliken, K.L., *in press*, Provenance of the Paleocene-Eocene Wilcox Group, western Gulf of Mexico basin: Evidence for integrated drainage of the southern Laramide Rocky Mountains and Cordilleran arc: Geological Society of America Bulletin.
- [47] §§Saylor, J.E., Stockli, D.F., **Horton, B.K.**, §§Nie, J., and Mora, A., *in press*, Discriminating rapid exhumation from syndepositional volcanism using detrital zircon double dating: Implications for the tectonic history of the Eastern Cordillera, Colombia: Geological Society of America Bulletin.
- [46] Taylor, M.T., Kapp, P.A., and **Horton, B.K.**, *in press*, Basin response to active extension and strike-slip deformation in the hinterland of the Tibetan plateau, *in* Busby, C., and Azor, A., editors, Tectonics of Sedimentary Basins: Recent Advances: Wiley-Blackwell.
- [45] **Horton, B.K.**, *in press*, Cenozoic evolution of hinterland basins in the Andes and Tibet, *in* Busby, C., and Azor, A., editors, Tectonics of Sedimentary Basins: Recent Advances: Wiley-Blackwell.
- [44] ††Bande, A., **Horton, B.K.**, †Ramirez, J.C., Mora, A., §§Parra, M. and Stockli, D.F., *in press*, Clastic deposition, provenance, and sequence of Andean thrusting in the frontal Eastern Cordillera and Llanos foreland basin of Colombia: Geological Society of America Bulletin.
- [43] ††Moreno, C.J., **Horton, B.K.**, †Caballero, V., Mora, A., §§Parra, M., and Sierra, J., 2011, Depositional and provenance record of the Paleogene transition from foreland to hinterland basin evolution during Andean orogenesis, northern Middle Magdalena Valley Basin, Colombia: Journal of South American Earth Sciences, v. 32, p. 1-18.
- [42] †Reece, R.S., Gulick, S.P.S., **Horton, B.K.**, Christeson, G.L., and Worthington, L.L., 2011, Tectonic and climate influence on the evolution of the Surveyor Fan and Channel system, Gulf of Alaska: Geosphere, v. 7, p. 830-844.
- [41] §§Saylor, J.E., **Horton, B.K.**, §§Nie, J., Corredor, J., and Mora, A., 2011, Evaluating foreland basin partitioning in the northern Andes using Cenozoic fill of the Floresta basin, Eastern Cordillera, Colombia: Basin Research, v. 23, p. 377-402.
- [40] ††Mosolf, J.G., **Horton, B.K.**, Heizler, M.T., and Matos, R., 2011, Unroofing the core of the central Andean fold-thrust belt during focused late Miocene exhumation: Evidence from the Tipuani-Mapiri wedge-top basin, Bolivia: Basin Research, v. 23, p. 346-360.
- [39] ††Giovanni, M.K., **Horton, B.K.**, Garziona, C.N., McNulty, B., and Grove, M., 2010, Extensional basin evolution in the Cordillera Blanca, Peru: Stratigraphic and isotopic records of detachment faulting and orogenic collapse in the Andean hinterland: Tectonics, v. 29, TC6007, TC2010TC002666.
- [38] Mora, A., **Horton, B.K.**, Mesa, A., Rubiano, J., Ketcham, R.A., §§Parra, M., Blanco, V., Garcia, D., and Stockli, D.F., 2010, Migration of Cenozoic deformation in the Eastern Cordillera of Colombia interpreted from fission track results and structural relationships: Implications for petroleum systems: American Association of Petroleum Geologists Bulletin, v. 94, p. 1543-1580.
- [37] ††Gavillot, Y., Axen, G., Stockli, D., **Horton, B.K.**, and Fakhari, M., 2010, Timing of thrust activity in the High Zagros fold-thrust belt, Iran, from (U-Th)/He thermochronometry: Tectonics, v. 29, TC4025, doi:10.1029/2009TC002484.
- [36] ††Murray, B.P., **Horton, B.K.**, Matos, R., and Heizler, M.T., 2010, Oligocene-Miocene basin evolution in the northern Altiplano, Bolivia: Implications for evolution of the central Andean backthrust belt and high plateau: Geological Society of America Bulletin, v. 122, p. 1443-1462.

- [35] **Horton, B.K.**, §§Saylor, J.E., §§Nie, J., Mora, A., §§Parra, M., Reyes-Harker, A., and Stockli, D.F., 2010, Linking sedimentation in the northern Andes to basement configuration, Mesozoic extension, and Cenozoic shortening: Evidence from detrital zircon U-Pb ages, Eastern Cordillera, Colombia: Geological Society of America Bulletin, v. 122, p. 1423-1442.
- [34] §Leier, A.L., McQuarrie, N., **Horton, B.K.**, and Gehrels, G.E., 2010, Upper Oligocene conglomerates of the Altiplano, central Andes: The record of deposition and deformation along the margin of a hinterland basin: Journal of Sedimentary Research, v. 80, p. 750-762.
- [33] **Horton, B.K.**, §§Parra, M., §§Saylor, J.E., §§Nie, J., Mora, A., Torres, V., Stockli, D.F., and Strecker, M.R., 2010, Resolving uplift of the northern Andes using detrital zircon age signatures: GSA Today, v. 20, no. 7, p. 4-9.
- [32] §§Nie, J., **Horton, B.K.**, Mora, A., §§Saylor, J.E., Housh, T.B., Rubiano, J., and Naranjo, J., 2010, Tracking exhumation of Andean ranges bounding the Middle Magdalena Valley Basin, Colombia: Geology, v. 38, p. 451-454.
- [31] §§Saylor, J.E., Mora, A., **Horton, B.K.**, and §§Nie, J., 2009, Controls on the isotopic composition of surface water and precipitation in the northern Andes, Colombian Eastern Cordillera: Geochimica et Cosmica Acta, v. 73, p. 6999-7018.
- [30] Fakhari, M.D., Axen, G.J., **Horton, B.K.**, Hassanzadeh, J., and Amini, A., 2008, Revised age of proximal deposits in the Zagros foreland basin and implications for Cenozoic evolution of the High Zagros: Tectonophysics, v. 451, p. 170-185.
- [29] **Horton, B.K.**, Hassanzadeh, J., Stockli, D.F., Axen, G.J., ††Gillis, R.J., †Guest, B., Amini, A., Fakhari, M., †Zamanzadeh, S.M., and Grove, M., 2008, Detrital zircon provenance of Neoproterozoic to Cenozoic deposits in Iran: Implications for chronostratigraphy and collisional tectonics: Tectonophysics, v. 451, p. 97-122.
- [28] Hassanzadeh, J., Stockli, D.F., **Horton, B.K.**, Axen, G.J., Stockli, L.D., Grove, M., Schmitt, A.K., and Walker, J.D., 2008, U-Pb zircon geochronology of late Neoproterozoic–Early Cambrian granitoids in Iran: Implications for paleogeography, magmatism, and exhumation history of Iranian basement: Tectonophysics, v. 451, p. 71-96.
- [27] †Guest, B., **Horton, B.K.**, Axen, G.J., Hassanzadeh, J., and McIntosh, W.C., 2007, Middle to late Cenozoic basin evolution in the western Alborz Mountains: Implications for the onset of collisional deformation in northern Iran: Tectonics, v. 26, TC6011, doi:10.1029/2006TC002091.
- [26] §§Zhou, J.Y., Wang, J.H., **Horton, B.K.**, Yin, A., and Spurlin, M.S., 2007, Sedimentology and chronology of Paleogene coarse clastic rocks in east-central Tibet and their relationship to early tectonic uplift: Acta Geologica Sinica [English edition], v. 81 (3), p. 398-408.
- [25] ††Hampton, B.A., and **Horton, B.K.**, 2007, Sheetflow fluvial processes in a rapidly subsiding basin, Altiplano plateau, Bolivia: Sedimentology, v. 54, p. 1121-1147.
- [24] ††Gillis, R.J., **Horton, B.K.**, and Grove, M., 2006, Thermochronology, geochronology, and upper crustal structure of the Cordillera Real: Implications for Cenozoic exhumation of the central Andean plateau: Tectonics, v. 25, TC6007, doi:10.1029/2005TC001887.
- [23] †Spurlin, M.S., Yin, A., **Horton, B.K.**, §§Zhou, J., and Wang, J., 2005, Structural evolution of the Yushu-Nangqian region and its relationship to syn-collisional igneous activity, east-central Tibet: Geological Society of America Bulletin, v. 117, p. 1293-1317.
- [22] **Horton, B.K.**, 2005, Revised deformation history of the central Andes: Inferences from Cenozoic foredeep and intermontane basins of the Eastern Cordillera, Bolivia, Tectonics, v. 24, TC3011, doi:10.1029/2003TC001619.
- [21] McQuarrie, N., **Horton, B.K.**, Zandt, G., Beck, S., and DeCelles, P.G., 2005, Lithospheric evolution of the Andean fold-thrust belt, Bolivia and the origin of the central Andean plateau: Tectonophysics, v. 399, p. 15-37.
- [20] Garziona, C.N., Dettman, D.L., and **Horton, B.K.**, 2004, Carbonate oxygen isotope paleoaltimetry: Evaluating the effect of diagenesis on paleoelevation estimates for the Tibetan plateau: Palaeogeography, Palaeoclimatology, Palaeoecology, v. 212, p. 119-140.
- [19] **Horton, B.K.**, Constenius, K.N., and DeCelles, P.G., 2004, Tectonic control on coarse-grained foreland-basin sequences: An example from the Cordilleran foreland basin, Utah: Geology, v. 32, p. 637-640.
- [18] **Horton, B.K.**, §Dupont-Nivet, G., Zhou, J., Waanders, G.L., Butler, R.F., and Wang, J., 2004, Mesozoic-Cenozoic evolution of the Xining-Minhe and Dangchang basins, northeastern Tibetan plateau: Magnetostratigraphic and biostratigraphic results: Journal of Geophysical Research, v. 109, B04402, doi:10.1029/2003JB002913.
- [17] §§Dupont-Nivet, G., **Horton, B.K.**, Butler, R.F., Wang, J., §§Zhou, J., and Waanders, G.L., 2004, Paleogene clockwise tectonic rotation of the Xining-Lanzhou region, northeastern Tibetan Plateau: Journal of Geophysical Research, v. 109, B04401, doi:10.1029/2003JB002620.

- [16] ††Hampton, B.A., **Horton, B.K.**, ††Fink, R.J., and ††LaReau, B.N., 2003, Paleogene basin development and synorogenic sedimentation in the Altiplano plateau, southwest Bolivia: Revista Técnica de Yacimientos Petrolíferos Fiscales Bolivianos, v. 21, p. 229-234.
- [15] DeCelles, P.G., and **Horton, B.K.**, 2003, Early to middle Tertiary foreland basin development and the history of Andean crustal shortening in Bolivia: Geological Society of America Bulletin, v. 115, p. 58-77.
- [14] **Horton, B.K.**, ††Hampton, B.A., ††LaReau, B.N., and †Baldellón, E., 2002, Tertiary provenance history of the northern and central Altiplano (central Andes, Bolivia): A detrital record of plateau-margin tectonics: Journal of Sedimentary Research, v. 72, p. 711-726.
- [13] **Horton, B.K.**, Yin, A., †Spurlin, M.S., §§Zhou, J., and Wang, J., 2002, Paleocene-Eocene syncontractional sedimentation in narrow, lacustrine-dominated basins of east-central Tibet: Geological Society of America Bulletin, v. 114, p. 771-786.
- [12] **Horton, B.K.**, ††Hampton, B.A., Waanders, G., 2001, Paleogene synorogenic sedimentation in the Altiplano plateau and implications for initial mountain building in the central Andes: Geological Society of America Bulletin, v. 113, p. 1387-1400.
- [11] Lageson, D.R., Schmitt, J.G., **Horton, B.K.**, Kalakay, T.J., and Burton, B.R., 2001, Influence of Late Cretaceous magmatism on the Sevier orogenic wedge, western Montana: Geology, v. 29, p. 723-726.
- [10] **Horton, B.K.**, and DeCelles, P.G., 2001, Modern and ancient fluvial megafans in the foreland basin system of the central Andes, southern Bolivia: Implications for drainage network evolution in fold-thrust belts: Basin Research, v. 13, p. 43-63.
- [9] **Horton, B.K.**, 2000, Reply: Sediment accumulation on top of the Andean orogenic wedge: Oligocene to late Miocene basins of the Eastern Cordillera, southern Bolivia: Geological Society of America Bulletin, v. 112, p. 1756-1759.
- [8] **Horton, B.K.**, 1999, Erosional control on the geometry and kinematics of thrust belt development in the central Andes: Tectonics, v. 18, p. 1292-1304.
- [7] Lundberg, J. G., Marshall, L. G., Guerrero, J., **Horton, B.**, Malabarba, M. C. and Wesselingh, F., 1998, The stage for neotropical fish diversification: A history of tropical South American rivers, in Malabarba, L. R., Reis, R. E., Vari, R. P., Lucena, C. A. S., and Lucena, Z. M. S., eds, Phylogeny and classification of neotropical fishes: Museu de Ciências e Tecnologia, PUCRS, Porto Alegre, Brazil, p. 13-48.
- [6] Molina Garza, R. S., Geissman, J. W., Gomez, A., **Horton, B.**, 1998, Paleomagnetic data from Triassic strata, Zuni uplift, New Mexico: Further evidence of large-magnitude Triassic apparent polar wander of North America: Journal of Geophysical Research, v. 103, p. 24,189-24,200.
- [5] **Horton, B.K.**, 1998, Sediment accumulation on top of the Andean orogenic wedge: Oligocene to late Miocene basins of the Eastern Cordillera, southern Bolivia: Geological Society of America Bulletin, v. 110, p. 1174-1192.
- [4] **Horton, B.K.**, and Schmitt, J.G., 1998, Development and exhumation of a Neogene sedimentary basin during extension, Nevada: Geological Society of America Bulletin, v. 110, p. 163-172.
- [3] **Horton, B.K.**, and DeCelles, P.G., 1997, The modern foreland basin system adjacent to the central Andes: Geology, v. 25, p. 895-898.
- [2] **Horton, B.K.**, and Schmitt, J.G., 1996, Sedimentology of a lacustrine fan-delta system, Miocene Horse Camp Formation, Nevada, USA: Sedimentology, v. 43, p. 133-155.
- [1] Schmitt, J.G., Haley, J.C., Lageson, D.R., **Horton, B.K.**, and Azevedo, P.A., 1995, Sedimentology and tectonics of the Bannack-McKnight Canyon-Red Butte area, southwest Montana: New perspectives on the Beaverhead Group and Sevier orogenic belt, in Mogk, D.W., ed., Northwest Geology: Field guide to geologic excursions in southwest Montana, v. 24, p. 245-313.