

Arjun M. Heimsath

School of Earth and Space Exploration (SESE), Arizona State University (ASU)
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Education

B.S.	1989	Yale College (Honors, Mechanical Engineering)
M.S.	1993	Yale University, School of Forestry and Environmental Studies
Ph.D.	1999	University of California, Berkeley (Geology)

Relevant Positions

2014-Present	Professor, School of Earth and Space Exploration, ASU
2007-Present	Associate Professor, School of Earth and Space Exploration, ASU
2010-Present	Senior Sustainability Scientist, Global Institute of Sustainability, ASU
2000-2007	Assistant Professor, Dartmouth College
1999-2000	NSF Post-doctoral Fellow, Australian National University, Canberra
1989-1991	Water Development Engineer, US Peace Corps, Kenya

Select Academic Honors

2013	Blaustein Visiting Professor, Stanford University
2007-2008	Guggenheim Fellowship: Soil Erosion and Sustainability
2006	Crosby Distinguished Lectureship, Massachusetts Institute of Technology
2004	Dartmouth College Junior Faculty Fellowship
2004	Presidential Early Career Award for Scientists and Engineers (PECASE)
2003-2007	NSF CAREER Award (5 yr) for research on Geomorphic Transport Laws
2001-2002	Jan De Ploey Prize for contributions to Process Geomorphology
1999-2000	NSF Post-doc Fellow (2 yr) for research on sediment transport rates
1995-1998	NASA Graduate Student Fellowship in Global Change Research
1994-1995	Switzer Environmental Graduate Fellowship

Research Interests

Geomorphology; Tectonic geomorphology; digital terrain modeling; Quaternary climate changes; Carbon sequestration and the carbon budget; Exposure-age dating (^{10}Be & ^{26}Al); Glacial geomorphology; Erosion and cliff retreat; Natural hazard assessment and prediction (landslides); Weathering processes and rates; ^{10}Be and ^{26}Al concentrations and production rates; Optically stimulated luminescence (OSL) and short lived isotopes (^{210}Pb , ^7Be , ^{137}Cs) toward sediment transport processes; Human impacts on the landscape.

Field Experience

Soil production and erosion: California and Oregon Coast Ranges, San Gabriel Mtns, CA, Southeastern and northern Australia, South Africa, Himalaya, Chugach, AK, South Africa.
Bedrock weathering: Southern Tibet, Nepal, Central and northern Australia, Southern California, Oregon Coast Range, Hubbard Brook, NH, Chugach Range in Alaska.
Exposure age dating: Southern Tibet, Nepal, Central Australia, Chugach Range, Arizona
Optically stimulated luminescence: Southeastern Australia, San Gabriel Mtns, CA.
Carbon Sequestration: Southeastern Australia, northern California, Oregon Coast Range
Quaternary Climate Changes: Northern and southeastern Australia, Tibet, Nepal, China, Arizona
Human Impacts: Central and coastal Kenya, South Africa, Indian Himalaya, Nepal Himalaya, Tibet, Oregon and California Coast Ranges, San Gabriel Mtns, CA.

Personal * Hindi as a second language, fluency in kiSwahili and Nepali, learning Spanish.
* Rock climbing, mountaineering, triathlons, creative writing (poetry and stories).

Refereed Publications (* denotes student or post-doc author – in review or in prep. not listed)

Citations: >3300; H-Index: 30

65. Jungers, M.C. and **Heimsath, A.M.**, In Review. Transverse canyon incision and sedimentary basin excavation driven by drainage integration, Aravaipa Creek, AZ. *ESPL*.
64. Jungers, M.C. and **Heimsath, A.M.**, In Review. Post-tectonic landscape evolution of a coupled basin and range: Pinaleno Mountains and Safford Basin, southeastern AZ. *GSA Bulletin*.
63. Amundson, R., **Heimsath, A.M.**, Owen, J.*, Yoo, K., and Dietrich, W.E., 2014. Hillslope Soils and Vegetation. *Geomorphology*. In Press.
62. DiBiase, R.A.*, Whipple, K.X., Lamb, M.P., and **Heimsath, A.M.**, 2014. The role of waterfalls and knickzones in controlling the style and pace of landscape adjustment in the western San Gabriel Mountains, CA. *GSA Bulletin*. In Press.
61. **Heimsath, A.M.**, 2014. Limits of Soil Production? *Science*, **343**:617-618.
60. **Heimsath, A.M.**, 2014. Luminescence Dating, Soils. Pp. xx-yy, in Rink, W.J., Thompson, J.W. (Eds.) *Encyclopedia of Scientific Dating Methods*, Springer-Verlag, Berlin-Heidelberg.
59. Chadwick, O.A., Roering, J.J., **Heimsath, A.M.**, Levick, S.R., Asner, G.P., and Khomo, L., 2013. Shaping post-orogenic landscapes by climate and chemical weathering. *Geology*, **41**:1171-1174.
58. Jungers, M.C.*, **Heimsath, A.M.**, Amundson, R., Balco, G., Shuster, D.L., and Chong, G., 2013. Active erosion-deposition cycles in the hyperarid Atacama Desert of northern Chile. *Earth and Planetary Science Letters*, **371-372**: 125-133.
57. **Heimsath, A.M.** and Burke, B.*, 2013. Quantifying the spatial variability of chemical weathering across soil-mantled landscapes. *Geomorphology*, **200**, 75-88.
56. **Heimsath, A.M.** and Jungers, M.C.*, 2013. Mountain and Hillslope Geomorphology: Processes, Transport, Deposition, and Landforms: Quantifying Creep. p. 138-151 in Shroder, J., Marston, R., Stoffel, M. (Eds.), *Treatise on Geomorphology*: Academic Press, San Diego, CA, vol. 7.
55. Amundson, R., Barnes, J.D., Ewing, S, **Heimsath A.M.**, and Chong, G., 2012. The stable isotope composition of halite and sulfate of hyperarid soils and its relation to aqueous transport. *Geochimica et Cosmochimica Acta*, **99**: 271-286.
54. Stang, D.M.*, Rhodes, E.J., and **Heimsath, A.M.**, 2012. Assessing soil mixing processes and rates using a portable OSL-IRSL reader: Preliminary determinations. *Quaternary Geochronology*, **10**: 314-319.
53. **Heimsath A.M.**, 2012. Quantifying processes governing soil-mantled hillslope evolution. In Lin, H. (ed.) "Hydropedology: Synergistic Integration of Soil Science and Hydrology", Academy Press, Elsevier B.V. p. 205-242; ISBN: 9780123869418.
52. Amundson, R., Dietrich, W.E., Bellugi, D., Ewing, S., Nishiizumi, K., Chong, G., Owen, J.*, Finkel, R., **Heimsath, A.M.**, Stewart, B., and Caffee, M., 2012. Geomorphic evidence for the Late Pliocene onset of hyperaridity in the Atacama desert. *GSA Bulletin*, **124**: 1048-1070.
51. DiBiase, R.A.*, **Heimsath, A.M.**, and Whipple, K.X., 2012. Hillslope response to tectonic forcing in threshold landscapes. *Earth Surface Processes and Landforms*, **37**: 855-865.
50. Dixon, J.L.*, Hartshorn, A.S.*, **Heimsath, A.M.**, DiBiase, R.A.*, and Whipple, K.X., 2012. Chemical weathering response to tectonic forcing: A soils perspective from the San Gabriel Mountains, California. *Earth and Planetary Science Letters*, **323-324**: 40-49.
49. **Heimsath, A.M.**, DiBiase, R.A.*, and Whipple, K.X., 2012. Soil production limits and the transition to bedrock dominated landscapes. *Nature Geosciences*, **5**: 210-214.

48. **Heimsath, A.M.** and Korup, O., 2012. Quantifying rates and processes of landscape evolution. *Earth Surface Processes and Landforms*, **37**: 249-251.
47. Pratt-Sitaula, B.A.* , Burbank, D.W., **Heimsath, A.M.**, Humphrey, N., Oskin, M., Putkonen, J., 2011. Topographic control of asynchronous glacial advances: A case study Annapurna, Nepal. *Geophysical Research Letters*, **38**: L24502, doi:10.1029/2011GL049940.
46. Kaste, J.M.* , Bostick, B.C., **Heimsath, A.M.**, Steinnnes, E., and Friedland, A.J., 2011. Using atmospheric fallout to date organic horizon layers and quantify dynamics during decomposition. *Geochimica et Cosmochimica Acta*, **75**: 1642-1661.
45. Brantley, S.L., et al., 2011. Twelve testable hypotheses on the geobiology of weathering. *Geobiology*, DOI: 10.1111/j.1472-4669.2010.00264.x
44. **Heimsath, A.M.**, Chappell, J., and Fifield, K., 2010. Eroding Australia: Rates and processes from Bega Valley to Arnhem Land. Geological Society, London, Special Publications; **346**: 225-241.
43. DiBiase, R.A.* , Whipple, K.X., **Heimsath, A.M.**, and Ouimet, W.B., 2010. Landscape form and millennial erosion rates in the San Gabriel Mountains, CA. *Earth and Planetary Science Letters*, **289**: 134-144.
42. **Heimsath, A.M.**, 2010. Can Our Soils Support Us? *Solutions*, **1**(3): 32-33.
41. **Heimsath, A.M.**, Hancock, G.R., and Fink, D., 2009. The ‘humped’ soil production function: Eroding Arnhem Land, Australia. *Earth Surface Processes and Landforms*, **34**: 1674-1684.
40. Furbish, D.J., Haff, P.K., Dietrich, W.E., and **Heimsath, A.M.**, 2009. Statistical description of slope-dependent soil transport and the diffusion-like coefficient. *Journal of Geophysical Research*, **114**: F00A05, doi:10.1029/2009JF001267.
39. O’Farrell, C.R.* , **A.M. Heimsath**, D.E. Lawson, L.M. Jorgensen*, E.B. Evenson, G. Larson, and J. Denner, 2009. Quantifying periglacial erosion: insights on a glacial sediment budget, Matanuska Glacier, Alaska. *Earth Surface Processes and Landforms*, **34**: 2008-2022.
38. Dixon, J.L.* , **Heimsath, A.M.**, Kaste, J.M.* , and Amundson, R., 2009. Climate driven processes of hillslope weathering. *Geology*, **37**: 975-978.
37. Dixon, J.L.* , **Heimsath, A.M.**, and Amundson, R., 2009. The critical role of climate and saprolite weathering in landscape evolution. *Earth Surface Processes and Landforms*, **34**: 1507-1521.
36. Cook, K.L.* , Whipple, K.X., **Heimsath, A.M.**, and Hanks, T., 2009. Rapid incision of the Colorado River in Glen Canyon – insights from channel profiles, local incision rates, and modeling of lithologic controls. *Earth Surface Processes and Landforms*, **34**: 994-1010.
35. Burke, B* **A.M. Heimsath**, J. Chappell, and K. Yoo*, 2009. Weathering the escarpment: Chemical and physical rates and processes, southeastern Australia. *Earth Surface Processes and Landforms*, **34**: 768-785. DOI: 10.1002/esp.1764.
34. **Heimsath, A.M.** and McGlynn, R.S.* , 2008. Quantifying headwall retreat rates in the Nepal High Himalaya. *Geomorphology*, **97**(1-2): 5-23. DOI:10.1016/j.geomorph.2007.02.046.
33. Pratt-Sitaula, B.A.* , Garde, M.* , Burbank, D.W., Oskin, M., **Heimsath, A.M.**, and Gabet, E. 2007. Bedload ratio, regional erosion rate, and rapid bedrock incision from Himalayan landslide-dam lake record. *Quaternary Research*, **68**: 111-120.
32. Harkins, N.* , Kirby, E., and **Heimsath, A.M.**, 2007. Transient fluvial incision in the headwaters of the Yellow River, northeastern Tibet, China. *J. of Geophysical Research*. **112**: F03S04.
31. Kirby, E., Johnson, C.* , Furlong, K., and **Heimsath, A.M.**, 2007. Transient channel incision along Bolinas Ridge, California: Evidence for differential rock uplift adjacent to the San Andreas Fault. *J. of Geophysical Research*, **112**, F03S07.
30. Yoo, K.* , R. Amundson, **A. M. Heimsath**, W. E. Dietrich, and G. H. Brimhall, 2007. Integration of geochemical mass balance with sediment transport to calculate rates of soil chemical

- weathering and transport on hillslopes. *J. of Geophysical Research*, **112**: F02013.
29. Kaste, J.M.*, **Heimsath, A.M.** and Bostick, B. C., 2007. Short-term soil mixing quantified with fallout radionuclides. *Geology*, **35**(3): 243-246.
 28. Salant, N.L.*, Renshaw, C.E., Magilligan, F.J., Kaste, J.M.*, Nislow, K.H., and **Heimsath, A.M.**, 2007. The use of short-lived radionuclides to quantify transitional bed load transport in a regulated river. *Earth Surface Processes and Landforms*, **32**: 509-524.
 27. Burke, B* and **Heimsath, A.M.**, and White, A.F., 2007. Coupling chemical weathering with soil production across soil mantled landscapes. *Earth Surface Processes and Landforms*. **32**: 853-873.
 26. O'Farrell, C.R.*, **Heimsath, A.M.**, and Kaste, J.M.*, 2007. Quantifying hillslope erosion rates and processes for a coastal California landscape over varying timescales. *Earth Surface Processes and Landforms*, **32**: 544-560.
 25. **Heimsath, A.M.**, Chappell, J., Finkel, R.C., Fifield, K., and Alimanovic, A., 2006. Escarpment erosion and landscape evolution in southeastern Australia. *Geological Society of America Special Paper 398*, p. 173-190. doi: 10.1130/2005.2398(10).
 24. Magilligan F.J., Salant, N.L.*, Renshaw, C.E., Nislow, K.H., **Heimsath, A.M.**, and Kaste, J. *, 2006, Evaluating the impacts of impoundment on sediment transport using short-lived fallout radionuclides, In: *Sediment Dynamics and The Hydromorphology of Fluvial Systems* (Ed. Rowan, J. and Werrity, A.), The International Association of Hydrological Sciences (IAHS) Special Publication 306, IAHS Press, Wallingford, UK, pp. 159-165.
 23. Kaste, J.M.*, Bostick, B.C., and **Heimsath, A.M.** 2006. Determining ^{234}Th and ^{238}U in rocks, soils, and sediments via the doublet gamma at 92.5 keV. *Analyst*, **131**(6): 757-763.
 22. Kaste, J.M.*, **Heimsath, A.M.**, and Hohmann, M., 2006. Quantifying sediment transport across an undisturbed prairie landscape using Caesium-137 and high-resolution topography. *Geomorphology*, **76**: 430-440.
 21. **Heimsath, A.M.**, 2006. Eroding the land: Steady-state and stochastic rates and processes through a cosmogenic lens. *GSA Special Paper 415*, p. 111-129, DOI 10.1130/2006.2415(07).
 20. **Heimsath, A.M.**, Furbish, D.J., and Dietrich, W.E., 2005. The illusion of diffusion: Field evidence for depth dependent sediment transport. *Geology*, **33**(12): 949-952.
 19. Yoo, K. *, Amundson, R., **Heimsath, A.M.**, and Dietrich, W.E., 2005. A process based model linking pocket gopher (*Thomomys bottae*) activity to sediment transport and soil thickness. *Geology*, **33**(11): 917-920.
 18. Niemi, N., Oskin, M., Burbank, D., and **Heimsath, A.M.**, 2005. Effects of bedrock landsliding on cosmogenically determined erosion rates. *Earth and Planetary Science Letters*, **237**: 480-498.
 17. Yoo, K. *, Amundson, R., **Heimsath, A.M.**, and Dietrich, W.E., 2005. Erosion of upland hillslope soil organic carbon: Coupling field measurements with a sediment transport model, *Global Biogeochemical Cycles*, **19**, GB3003, doi:10.1029/2004GB002271.
 16. Garvin, C.*, Hanks, T.C., Finkel, R.C., and **Heimsath, A.M.**, 2005. Episodic incision of the Colorado River in Glen Canyon, Utah. *Earth Surface Proc. and Landforms*, **30**(8): 973-984.
 15. Yoo, K. *, Amundson, R., **Heimsath, A.M.**, and Dietrich, W.E., 2005. Spatial patterns of soil organic carbon on hillslopes: Integrating geomorphic processes and the biological C cycle. *Geoderma*, **130**(1-2): 47-65.
 14. Wobus, C. *, **Heimsath, A.M.**, Whipple, K.X., Hodges, K., 2005. Active surface thrust faulting in the Central Nepalese Himalaya. *Nature*, **434**: 1008-1011.
 13. **Heimsath, A.M.**, and Ehlers, T., 2005. Quantifying Rates and Timescales of Geomorphic Processes. *Earth Surface Processes and Landforms*, **30**(8): 917-922.

12. Pratt-Situala, B.*, Burbank, D.W., **Heimsath, A.M.**, and Ojha, T., 2004. Landscape disequilibrium on 1,000 to 10,000 year scales: Marsyandi River, Nepal, central Himalaya. *Geomorphology*, **58**(1-4): 223-241.
11. Dietrich, W.E., Bellugi, D., **Heimsath, A.M.**, Roering, J.J., Sklar, L., and Stock, J.D., 2003. Geomorphic Transport laws for predicting landscape form and dynamics. In *Prediction in Geomorphology*, Wilcock, P. and Iverson, R. (eds), American Geophysical Union monograph No. 135, Washington, D.C., p. 103-132.
10. **Heimsath, A.M.** and Farid, H., 2003. "Hillslope topography from unconstrained photographs" by A.M. Heimsath and Hany Farid – Reply. *Mathematical Geology*, **35**(3): 351-352.
9. **Heimsath, A.M.** and Farid, H., 2002. Hillslope topography from unconstrained photographs. *Mathematical Geology*, **34**(8): 929-952.
8. Pratt, B.*, Burbank, D.W., **Heimsath, A.M.**, and Ojha, T., 2002. Alluviation during Early Holocene strengthened monsoons, Central Nepal Himalaya. *Geology*, **30**(10): 911-914.
7. **Heimsath, A.M.**, Chappell, J.C., Spooner, N.A., Questiaux, D.G., 2002. Creeping soil. *Geology*, **30**(2): 111-114.
6. **Heimsath, A.M.**, Dietrich, W.E., Nishiizumi, K., and Finkel, R.C., 2001. Stochastic processes of soil production and transport: erosion rates, topographic variation and cosmogenic nuclides in the Oregon Coast Range. *Earth Surface Processes and Landforms*, **26**: 531-552.
5. **Heimsath, A.M.**, Chappell, J.C., Dietrich, W.E., Nishiizumi, K., and Finkel, R.C., 2001. Late Quaternary erosion in southeastern Australia. *Quaternary International*, **83-85**: 169-185.
4. Braun, J., **Heimsath, A.M.**, Chappell, J.C., 2001. Sediment transport mechanisms on soil mantled landscapes. *Geology*, **29**(8): 683-686.
3. **Heimsath, A.M.**, Chappell, J.C., Dietrich, W.E., Nishiizumi, K., and Finkel, R.C., 2000. Soil production on a retreating escarpment in southeastern Australia. *Geology*, **28**(9): 787-790.
2. **Heimsath, A.M.**, Dietrich, W.E., Nishiizumi, K., and Finkel, R.C., 1999. Cosmogenic nuclides, topography, and the spatial variation of soil depth. *Geomorphology*, **27**(1/2): 151-172.
1. **Heimsath, A.M.**, Dietrich, W.E., Nishiizumi, K., and Finkel, R.C., 1997. The soil production function and landscape equilibrium. *Nature*, **388**: 358-361.

Other Publications

- Heimsath, A.M.**, 2004. *Swayambu's Shadow & Walking the Dusty Road* (poems), and *The Inner Gorge & Manasalu's Cloud* (photos), Woodsmoke, Spring.
- Heimsath, A.M.**, 2001. *Courtyard*. Seedhouse Literary Journal, Fall Volume. (poem).
- Heimsath, A.M.**, 2000. Himalayan Erosion. *Seminar*, **486**: 19-25. (essay).
- Heimsath, A.M.**, 2000. Human Impacts on Ancient Environments. Book Review. *Society for Archaeological Sciences Bulletin*, **23**(2):16-18.
- Heimsath, A.M.**, 1993. A comparison of stream flow from agricultural and forested watersheds in the Middle Hills, Nepal. Working Paper #63, Tropical Resources Institute, Yale, New Haven. 62 p.

Non-science

- Rock Climbing Guide: Climbing in The Refuge*, Fall, 2011; revised Fall, 2012, Spring, 2014.
- Mesa Refuge: Writing Refuge Fellowship*, Common Council Foundation, Pt. Reyes, CA, Fall, 2003.
- Books in progress: *Himalayan Wanderer* (essays) and *Walking the Horizontal Well* (poems).
- Poems, essays and short stories are always in progress and submitted periodically for publication.
- Landscape Photography taken and submitted, published periodically.

Scientists with whom I've collaborated recently

Mike Lamb (CalTech); Curtis Marean, Kostalena Michelaki and Michael Barton (ASU)
Phil Christensen, Kip Hodges, Enrique Vivoni, Kelin Whipple (ASU); Eric Kirby (OSU)
Ronald Amundson, William E. Dietrich, Kunihiro Nishiizumi, David Shuster (UCB)
Doug Burbank and Oliver Chadwick (UCSB), Robert C. Finkel (LLNL)
John Chappell, Jean Braun, Ed Rhodes (retired, Grenoble, and UCLA, respectively)
Garry Willgoose and Greg Hancock (The University of Newcastle)

NSF Post-Doc collaborator: John Chappell, Australian National University

Ph.D. advisor: William E. Dietrich, University of California, Berkeley

M.S. advisor: Paul K. Barten, Yale University

Selected Grant Support

NSF – Coupled Natural Human Systems: (Co-I w/ PI Barton, ASU)

The Emergence of Coupled Natural and Human Landscapes in the Western Mediterranean.

60 month, 8/01/13 – 7/31/18, \$1,300,00.

American Chemical Society, Petroleum Research Fund:

Dating Basin Deposits: Extending the Reach of Cosmogenic Nuclide Dating Into the Miocene.

32 months, 1/1/12 – 8/31/14, \$100,000.

NSF – Earth Sciences, Geology & Paleontology, and Geomorphology and Landuse Dynamics:

Landscape Sensitivity to Changing Climage: Plio-Pleistocene Erosion and Sedimentation in SE Arizona.

24 months, 09/01/11 – 08/31/13, \$253,423.

NSF – Earth Sciences, Tectonics: (dual-PI w/ Whipple, ASU):

Post-6-Ma Tectonic Evolution of the Bhutan Himalaya

24 months, 07/01/11 – 06/30/13, \$179,008.

Selected Past Grant Support

Guggenheim Foundation – Personal Fellowship:

Can Our Soils Support Us?

9 months, 09/01/07 – 05/31/08, \$40,000.

NSF - Earth Sciences Geomorphology and Land Use Dynamics: (dual-PI w/ Whipple, ASU):

Tectonics and Topography in the Transverse Ranges: Landscape Response to Rock Uplift Rate across the Transition from Soil-Mantled to Rocky Slopes.

36 months, 07/01/05 - 06/30/08, \$257,477 – Went into extension

NSF – Earth Sciences Geology and Paleontology:

CAREER – Quantifying Erosional Processes on Upland Landscapes.

60 months, 01/31/03 – 01/31/09, \$428,541 – Went into extension.

NSF – Ecosystem Studies Program Collaborative Research (dual-PI w/ Amundson, UCB):

Erosional Removal And Redistribution Of Organic Carbon In Undisturbed Upland Ecosystems.

36 months, 07/01/02 – 06/30/06, \$217,600.

NSF – Geography, as co-PI (lead PI – Magilligan, Dartmouth):

The Impacts of Flow Regulation By Dams on the Physical and Ecological Characteristics Of Rivers.

24 months, 07/01/03 – 06/30/05, \$244,000.

NSF – Continental Dynamics Program, as co-PI (lead PI – Burbank, UCSB):
Geomorphic-Geodynamic Coupling at the Orogen Scale: a Himalayan Transect in Central Nepal.
48 months, 01/01/00 – 12/31/04, \$306,402. Extended with a \$16,432 supplement.

US Army Corps of Engineers – Cold Regions Research and Engineering Laboratory:
Radionuclide Analysis of Soils from an Undisturbed Prairie LTER Field Site.
12 months, 08/01/03 – 07/31/04, \$48,326.

Australian Research Council (ARC), as Partner Investigator (w/ Willgoose and Hancock):
Quantifying The Impact Of Weathering On Long-Term Erosion And Soil Development.
36 months, 01/01/01 – 12/31/03, ~\$45,000.

NSF – Postdoctoral Research Fellowship:
Optically Stimulated Luminescence And Topography To Quantify Hillslope Sediment Transport Laws.
01/01/99 – 6/30/00, \$72,000

Graduate studies at UC Berkeley, w/ PI Bill Dietrich.

NASA graduate fellowship for Global Change research, \$45,000; Switzer Environmental Fellowship (\$10,000) to support graduate research with cosmogenic radionuclides toward quantifying the soil production function. Assisted PI Dietrich in writing successful grant proposals to several agencies, including NSF, IGPP and CalSpace for this work.

Post-Doctoral Advising:

Jong-Min Byun (Korea Univ.), Anthony Hartshorn (Montana State Univ.), Jean Dixon (Montana State Univ.), Veerle Vanacker (Université catholique de Louvain), James Kaste (William and Mary).

Graduate Student Advising: (thesis topics listed at end)

At Arizona State University

Ph.D.: Scott Robinson, Marina Foster, Andy Darling, Matt Jungers, Roman DiBiase, Jeni McDermott, Wendy Bohon, Byron Adams, Erin DiMaggio, Nathan Toke, Tafique Mahmood, Matt Rossi

M.S.: Joseph Walsh, David Haddad, Megan Muretta, Kelli Wakefield, Melinda Shimizu

At Dartmouth

Ben Burke, Jean Dixon, James Kaste (PhD); Elizabeth Johnson, Joel Byersdorfer, Cris Garvin, Robert McGlynn, Colin O'Farrell (MS); Beth Pratt-Sitaula (UCSB, MS; PhD); Kyungsoo Yoo (UCB, PhD); Cameron Wobus (MIT, PhD); Feixin Huang (Chinese Academy of Sciences, Dept. of Geology, PhD).

Undergraduate Student Advising:

At Arizona State University

Joseph Walsh, David deBruin (Honors theses); 1-2 students/semester on non-thesis projects.

At Dartmouth

Carmen Springer, Laura Jorgensen, Deane Sommerville, Emily Leshner and Colin O'Farrell (Honors theses), Elizabeth Asher (independent research project in San Gabriel Mountains and at ASU), Alex Hamlin (independent Senior research project in NH), Deane Sommerville and Layne Moffett (independent research project in New Zealand).

Conference Abstracts Published as Presenter

(Not including numerous abstract publications that have my colleagues as first authors)

Heimsath, A.M., Chadwick, O.A., Roering, J.J., and Levick, S.R., 2014. *INVITED*. Digging with

- rhinos: Soil production and transport across and equilibrium landscape. *GSA Abstracts with Programs, Transects of 2014 Annual Meeting*.
- Heimsath, A.M.**, 2014. *INVITED*. Limits of soil production and the couplings with hillslope hydrology. Japan Geophysical Union Annual Meeting, Yokohama, April.
- Heimsath, A.M.**, DiBiase, R.A.* and Whipple, K.X., 2012. *INVITED*. Soil production and erosion rates and processes in mountainous landscapes. *EOS Supplement, Transactions of the AGU Fall Meeting, San Francisco, CA*.
- Heimsath, A.M.**, 2012. *INVITED*. Strength matters: Resisting erosion across upland landscapes. *EOS Supplement, Transactions of the AGU Fall Meeting, San Francisco, CA*.
- Heimsath, A.M.**, 2012. *INVITED*. Quantifying hillslope rates and processes using an interdisciplinary, field-based approach. Binghamton Geomorphology Symposium.
- Heimsath, A.M.**, DiBiase, R.A.* and Whipple, K.X., 2012. From rock to soil: Quantifying rates and processes using cosmogenic 10-Be. IGC, Brisbane, Australia.
- Heimsath, A.M.**, Dixon, J.L.* , DiBiase, R.A.* , and Whipple, K.X., 2012. *INVITED*. The Art of augering, observing, and connecting processes across threshold landscapes. Goldschmidt, Montreal, Canada.
- Heimsath, A.M.**, DiBiase, R.A.* , and Whipple, K.X., 2011. Soil production limits and the transition to bedrock dominated landscapes. *EOS Supplement, Transactions of the AGU Fall Meeting, San Francisco, CA*.
- Heimsath, A.M.**, Jungers, M.C.* , Amundson, R., Balco, G., and Shuster, D.L., 2010. Eroding and Inflating the Atacama Desert, Chile: Insights Through Cosmogenic 10-Be, 26-Al and 21-Ne, *EOS Supplement, Transactions of the AGU Fall Meeting, San Francisco, CA*.
- Heimsath, A.M.**, DiBiase, R.A.* , Whipple, K.X., and Walsh, J.* , 2009. Sediment supply differences between soil and bedrock dominated landscapes, San Gabriel Mountains, CA, *EOS Trans. AGU, 90(52), Fall Meet. Suppl.*, Abstract EP54A-01.
- Heimsath, A.M.**, 2008. *INVITED*. Quantifying erosion rates and processes across upland landscapes. *Proceeding of the British Society for Geomorphology Annual Meeting*.
- Heimsath, A.M.**, Chappell, J., Hancock, GR, Fifield, K., and Fink, D., 2008. Eroding Australia: Slowly. *Geochimica Cosmochimica Acta*, **72**: A363. *Supplement to Goldschmidt Conference*.
- Heimsath, A.M.**, 2008. *INVITED*. Erosion rates and processes across two trans Himalayan transects in central Nepal. *Himalayan Geology*, **29**-p28. *Proceedings of Himalayan Geology Annual Meeting*.
- Heimsath, A.M.**, 2007. *INVITED*. Hillslope processes and the delivery of sediment to the channel. *EOS Supplement, Transactions of the American Geophysical Union, Fall 2007 annual meeting*.
- Heimsath, A.M.**, 2007. From Australia to Nepal: Detrital cosmo from the ends of the Earth. *EOS Supplement, Transactions of the American Geophysical Union, Fall 2007 annual meeting*.
- Heimsath, A.M.**, Kaste, J.M., Burke, B.C., Dixon, J.L. and Byersdorfer, J., 2007. Coupling physical and chemical weathering processes across upland landscapes. *GSA Abstracts with Programs, Transects of 2007 Annual Meeting*.
- Heimsath, A.M.**, 2006. *INVITED*. Quantifying soil production and transport processes. *GSA Pardee Keynote Symposia, Annual meeting of the Geological Society of America, Fall 2006*.
- Heimsath, A.M.** and Burke, B.C.* , 2006. *INVITED*. Eroding an escarpment: quantifying physical and chemical processes across the Great Escarpment of southeastern Australia. *EOS Supplement, Transactions of the American Geophysical Union, Fall 2006 annual meeting*.

- Heimsath, A.M.**, 2006. Eroding the land: Steady-state and stochastic rates and processes through a cosmogenic lens. *Geochimica et Cosmochimica Acta, Special Supplement, 16th Annual V.M. Goldschmidt Conference, Melbourne, Australia.*
- Heimsath, A.M.**, Furbish, D.J., and Dietrich, W.E., 2005. *INVITED*. The transience of soil mantled landscapes: Quantifying sediment transport processes. *EOS Supplement, Transactions of the American Geophysical Union, Fall 2005 annual meeting.*
- Heimsath, A.M.**, 2005. *INVITED*. Coupling physical and chemical processes across upland landscapes. *Geochimica et Cosmochimica Acta, Special Supplement, 15th Annual V.M. Goldschmidt Conference, Moscow, Idaho.*
- Heimsath, A.M.** and Wobus, C.*, 2004. Erosion rates and processes across two trans Himalayan transects in central Nepal. *EOS Supplement, Transactions of the American Geophysical Union, Fall 2004 annual meeting.*
- Heimsath, A.M.**, 2004. *INVITED*. Eroding the Himalaya: Cosmogenic Pushing the Limits of Cosmogenic Nuclides. *Transactions from the 32nd IGC annual meeting, Florence, Italy, August.*
- Heimsath, A.M.**, 2004. *INVITED*. From Manang to Mugling: Cosmogenic Nuclides and Erosion Rates Across a Transect of the Nepal Himalaya. *Transactions from the 1st annual AOGS annual meeting, Singapore, July.*
- Heimsath, A.M.** and Chappell, J., 2003. Escarpment erosion and landscape evolution in southeastern Australia. *EOS Supplement, Transactions of the American Geophysical Union, Fall 2003 annual meeting.*
- Heimsath, A.M.** and Farid, H., 2002. Hillslope topography from unconstrained photographs. *EOS Supplement, Transactions of the American Geophysical Union, Fall 2002 annual meeting.*
- Heimsath, A.M.**, 2002. *INVITED*. Simple hillslope erosion narrated by complex methods. *Geochimica et Cosmochimica Acta, Special Supplement, 12th Annual V.M. Goldschmidt Conference, Davos, Switzerland.*
- Heimsath, A.M.**, 2001. *INVITED*. Sediment production and transport on hilly landscapes. *Transactions of the Geological Society of America, Annual Fall Meeting, 2001, Boston, MA.*
- Heimsath, A.M.**, Chappell, J.C., Spooner, N.A., Questiaux, D.G., 2001. Creeping soil by optically stimulated luminescence and cosmogenic nuclides. *EOS Supplement, Transactions of the American Geophysical Union, Spring 2001 meeting.*
- Braun, J., **Heimsath, A.M.**, and Chappell, J.C., 2000. On the nature of sediment transport mechanisms on hillslopes. *EOS Supplement, Transactions of the American Geophysical Union, Fall 2000 meeting.*
- Heimsath, A.M.**, and Chappell, J.C., 2000. Bedrock erosion and soil production rates determined with cosmogenic ²⁶Al and ¹⁰Be in Australia. *EOS Supplement, Transactions of the American Geophysical Union, Fall 2000 meeting.*
- Heimsath, A.M.**, and Chappell, J.C., 2000. Soil production, bedrock erosion, and river incision rates in SE Australia. Quaternary Studies Meeting. Regional analysis of Australian Quaternary Studies: strengths, gaps, and future directions, Australian National University, Canberra.
- Heimsath, A.M.**, Chappell, J.C., Spooner, N., and Dietrich, W.E., 1999. Erosion Laws by Optically Stimulated Luminescence and Cosmogenic Nuclides in Southeastern Australia. *EOS Supplement, Transactions of the American Geophysical Union, Fall 1999 meeting.*

- Heimsath, A.M.**, Dietrich, W.E., Nishiizumi, K., Finkel, R.C., 1998. Soil production and transport in the Marin Headlands. First symposium on current research in GGNRA. USDI, National Park Service.
- Heimsath, A.M.**, Dietrich, W.E., Nishiizumi, K., Finkel, R.C., and Chappell, J.C., 1998. Soil production, bedrock erosion rates, and landscape evolution on Australia's Southeastern Tablelands. *EOS Supplement, Transactions of the American Geophysical Union, Spring 1998 meeting.*
- Heimsath, A.M.**, Dietrich, W.E., Nishiizumi, K., and Finkel, R.C., 1997. Topography, soil depth, and cosmogenic nuclides in Australia and California: the soil production function. *EOS Supplement, Transactions of the American Geophysical Union, Fall 1997 Annual Meeting.*
- Heimsath, A.M.**, Dietrich, W.E., Nishiizumi, K., and Finkel, R.C., 1997. Cosmogenic nuclide and geomorphic determination of soil production in Northern California and Coastal Oregon. *AAG Supplement, Annual Meeting of the American Association of Geographers, Spring 1997.*
- Heimsath, A.M.**, Dietrich, W.E., Nishiizumi, K., and Finkel, R.C., 1996. Soil production and landscape equilibrium: hillslope analysis using cosmogenic nuclides in Northern California and Coastal Oregon. *EOS Supplement, Transactions of the American Geophysical Union, Fall 1996 Annual Meeting.*
- Heimsath, A.M.**, Dietrich, W.E., Nishiizumi, K., and Finkel, R.C., 1996. The soil production function: cosmogenic nuclides, soil depth and topography in the Oregon Coast Range and Marin County, California. *GSA transactions, Annual meeting of the Geological Society of America, Fall 1996.*
- Heimsath, A.M.**, Dietrich, W.E., Nishiizumi, K., and Finkel, R.C., 1995. Soil depth, topography, biota, and climate change: results from two field-based methods. *EOS Supplement, Transactions of the American Geophysical Union, Spring Meeting 1995.*

Conference Abstracts with students or post-docs as first authors (noted by*)

- Foster, M.* , Whipple, K.X., **Heimsath, A.M.**, and Jungers, M.C.* , 2014. Soil production and erosion on a low-relief, soil-mantled landscape in the Pinaleno Mountains, Arizona. *EOS Supplement, Trans. of the AGU Fall Meeting, San Francisco, CA.*
- Jungers, M.C.* , and **Heimsath, A.M.**, 2014. Post-tectonic landscape evolution of a coupled basin and range: Pinaleno Mountains and Safford Basin, southeastern AZ. *GSA Abstracts with Programs, Transects of 2014 Annual Meeting.*
- Jungers, M.C.* , and **Heimsath, A.M.**, 2013. Climate and Tectonics Need Not Apply: Transient Erosion Driven by Drainage Integration, Aravaipa Creek, AZ. *EOS Supplement, Trans. of the AGU Fall Meeting, San Francisco, CA.*
- Foster, M.* , Whipple, K.X., and **Heimsath, A.M.**, 2013. Testing the soil production paradigm: Role of catchment-mean erosion rate in colluvial soil production. *EOS Supplement, Trans. of the AGU Fall Meeting, San Francisco, CA.*
- Adams, B.A.* , Whipple, K.X., Van Soest, M.C., and **Heimsath, A.M.**, 2013. Tectonic controls of transient landscapes in the Bhutan Himalaya. *EOS Supplement, Trans. of the AGU Fall Meeting, San Francisco, CA.*
- Robinson, S.M.* , Whipple, K.X., Arrowsmith, R., **Heimsath, A.M.**, Foster, M.* , and Cohen, A.S., 2013. Quantifying the temporal and spatial response of channel steepness to changes in rift basin architecture. *EOS Supplement, Trans. of the AGU Fall Meeting, San Francisco, CA.*

- Byun, J-M.* , Seong, Y.B., and **Heimsath, A.M.**, 2012. Basin wide erosion rates and soil production rates of a high-altitude low-relief area (HLA) in the Korean Peninsular considered as an uplifted paleo surface. *EOS Supplement, Trans. of the AGU Fall Meeting, San Francisco, CA.*
- DiBiase, R.A.* , Lamb, M.P., **Heimsath, A.M.**, and Whipple, K.X., 2012. Vegetation controls on sediment storage and release on steep, rocky hillslopes. *EOS Supplement, Trans. of the AGU Fall Meeting, San Francisco, CA.*
- Jungers, M.C.* , **Heimsath, A.M.**, Amundson, R., Balco, G., and Shuster, D.L., 2012. Mid-Pleistocene erosion-deposition cycles in the hyperarid Atacama Desert of northern Chile. *EOS Supplement, Trans. of the AGU Fall Meeting, San Francisco, CA.*
- Oerter, E.* , Amundson, R., **Heimsath, A.M.**, M.C. Jungers*, G. Chong, 2011. Paleosol-based evidence for humid to semi-arid pre-10Ma climates in the Atacama Desert, Chile. *EOS Supplement, Transactions of the AGU Fall Meeting, San Francisco, CA.*
- Adams, B.A.* , Whipple, K.X., **Heimsath, A.M.**, and Hodges, K.V., 2011. The Bhutan Mystery: Climate or Tectonics? *EOS Supplement, Trans. of the AGU Fall Meeting, San Francisco, CA.*
- Jungers., M.C.* and **Heimsath, A.M.**, 2011. Putting the “Basin” Back in Southeastern Arizona’s Basin and Range. *EOS Supplement, Transactions of the AGU Fall Meeting, San Francisco, CA.*
- Rossi, M.W.* , Whipple, K.X., DiBiase, R.A.* , and **Heimsath A.M.**, 2011. Climatic controls on steady state erosion using the relationship between channel steepness and cosmogenic ¹⁰Be-derived catchment averaged erosion rates. *EOS Supplement, Transactions of the AGU Fall Meeting, San Francisco, CA.*
- Stang, D* , Rhodes, E.J., and **Heimsath, A.M.**, 2011. Determination of Landscape Diffusivity Using Optically Stimulated Luminescence and Infrared Stimulated Luminescence Techniques. *EOS Supplement, Transactions of the AGU Fall Meeting, San Francisco, CA.*
- Adams, B.A.* , Whipple, K.X., **Heimsath, A.M.**, Wan Soest, M.C., and Hodges, K.V., 2010. The Enigmatic Transient Landscapes of Bhutan. *EOS Supplement, Transactions of the AGU Fall Meeting, San Francisco, CA.*
- Rossi, M.W.* , Whipple, K.X., DiBiase, R.A.* and **Heimsath, A.M.**, 2010. Climate and the erosional efficiency of fluvial systems. *EOS Supplement, Transactions of the AGU Fall Meeting, San Francisco, CA.*
- DiBiase, RA* , Whipple, K.X., and **Heimsath, A.M.**, 2010. Using topography to decipher the uplift history of the western San Gabriel Mountains, CA. *EOS Supplement, Transactions of the AGU Fall Meeting, San Francisco, CA.*
- Jungers, MC* , Amundson, R., **Heimsath, A.M.**, Christensen, P.R., and Edwards, C.S., 2010. Ancient and Modern Salars of the Atacama Desert, Chile: A Terrestrial Analog for Evaporite Formation on Mars. *EOS Supplement, Transactions of the AGU Fall Meeting, San Francisco, CA.*
- Dixon, JL* , Hartshorn, A.S.* , **Heimsath, A.M.**, DiBiase, R.A.* , and Whipple, K.X., 2010. Chemical Weathering in the San Gabriel Mountains of California: The influence of erosion rates, soil depth, and transport processes on soil chemical losses (*Invited*). *EOS Supplement, Transactions of the AGU Fall Meeting, San Francisco, CA.*
- DiBiase, R.A.* , Whipple, K.X., and **Heimsath, A.M.**, 2009. Channel incision and the role of sediment supply in the San Gabriel Mountains, California. *EOS Trans. AGU, 90(52), Fall Meet. Suppl.*, Abstract EP54A-02.
- Dixon, JL* , **Heimsath, AM**, and Amundson, R, 2008. Saprolite and the evolution of upland landscapes - Links between erosion and weathering in Sierra Nevada, CA. *Geochimica Cosmochimica Acta*, 72:A220.

- Hartshorn AS*, **Heimsath AM**, Chadwick OA, 2008. Maximum granite catena differentiation. *Geochimica Cosmochimica Acta*, 72:A355.
- Dixon, JL*, **Heimsath, AM**, and Amundson, R, 2008. Delving deeper: how saprolite and chemical weathering influence the expression of climate on surface shaping processes. *EOS Supplement, Transactions of the American Geophysical Union, Fall 2008 annual meeting*.
- DiBiase, RA*, **Heimsath, AM**, and Whipple, KX, 2008. Hillslope angle, channel steepness and millennial erosion rates in the San Gabriel Mountains, CA. *EOS Supplement, Transactions of the American Geophysical Union, Fall 2008 annual meeting*.
- Dixon, JL*, **Heimsath, AM**, Burke, BC*, and Amundson, R, 2007. The role of saprolite weathering in landscape evolution. *GSA Abstracts with Programs, Transects of 2007 Annual Meeting*.
- Johnson, E*, **Heimsath, AM**, and Dade, WB, 2007. Rock matters: lithologic controls on landscape evolution. *EOS Supplement, Transactions of the American Geophysical Union, Fall 2007 annual meeting*.
- Dixon, JL*, **Heimsath, AM**, Finnegan, D, and Amundson, R, 2007. Erosion processes, morphometrics and the influence of climate on upland soil-mantled landscape. *EOS Supplement, Transactions of the American Geophysical Union, Fall 2007 annual meeting*.
- Kaste JM*, **Heimsath AM**, Bostick BC, Steinnes E, and Friedland AJ, 2007. Forest canopy contributions to the weathering profile. *GSA Abstracts with Programs*, **39**: #10-2.
- Dixon, J.L.* , **Heimsath, A.M.**, and Amundson, R., 2006. Climate driven tradeoffs in chemical and physical landscape denudation. *EOS Supplement, Transactions of the American Geophysical Union, Fall 2006 annual meeting*.
- Wobus, C.* , Whipple, K.X., Hodges, K.V., and **Heimsath, A.M.**, 2006. Locating active structures in the central Nepalese Himalaya: Applications of detrital ⁴⁰Ar/³⁹Ar thermochronology and cosmogenic radionuclides. *EOS Supplement, Transactions of the American Geophysical Union*.
- Burke, B.C.* , **Heimsath, A.M.**, and White, A.F., 2006. Quantifying chemical and physical weathering across the passive margin escarpment of southeastern Australia. *EOS Supplement, Transactions of the American Geophysical Union, Fall 2006 annual meeting*.
- Dixon, J.L.* , **Heimsath, A.M.**, Amundson, R., and Kaste, J.M.* , 2006. Deconstructing the climate-erosion connection. *GSA Transactions, Annual meeting of the Geological Society of America*.
- Harkins, N.* , Kirby, E., and **Heimsath, A.M.**, 2006. Spatially averaged sediment TCN concentrations describe steady-state and transient landscape process in NE Tibet. *GSA Transactions, Annual meeting of the Geological Society of America*.
- Hartshorn, A.* , Khomo, L.* , Chadwick, O.A., Rogers, K., Kurtz, A., **Heimsath, A.M.**, 2005. Hillslope Chromatography in Savannas. *EOS Supplement, Transactions of the American Geophysical Union, Fall 2005 annual meeting*.
- Khomo, L.* , Hartshorn, A.* , Chadwick, O.A., Rogers, K., Kurtz, A., **Heimsath, A.M.** , 2005. Chemical and Physical Weathering of Granites in a Semi-Arid Savanna. *EOS Supplement, Transactions of the American Geophysical Union, Fall 2005 annual meeting*.
- Dixon, J.L.* , **Heimsath, A.M.**, Kaste, J.M.* , and Amundson, R., 2005. Climate does matter: Quantifying rates and processes for a southern California climate gradient. *EOS Supplement, Transactions of the American Geophysical Union, Fall 2005 annual meeting*.
- Harkins, N.* , Kirby, E., **Heimsath, A.M.**, and Kline, K., 2005. Transient fluvial incision in the upper reaches of the Yellow River: Base-level fall or differential rock uplift? *EOS Supplement, Transactions of the American Geophysical Union, Fall 2005 annual meeting*.
- O'Farrell, C.R.* , **Heimsath, A.M.**, Lawson, D.E., Jorgensen, L.H.* , Evenson, E.B., and Larson, G., 2005. Above the glacier: Non-glacial erosion rates and processes feeding the Matanuska Glacier, Alaska. *EOS Supplement, Transactions of the American Geophysical Union, Fall 2004 annual meeting*.

- Byersdorfer, J.P.*, Burke, B.C.*, **Heimsath, A.M.**, and Dade, W.B., 2005. Resisting erosion: Quantifying controls on soil production. *EOS Supplement, Transactions of the American Geophysical Union, Fall 2005 annual meeting.*
- Pratt-Sitaula, B.A.*, Burbank, D.W., **Heimsath, A.M.**, Humphrey, N., Oskin, M., and Putkonen, J., 2005. Climate and glaciation in the Nepalese Himalaya. *EOS Supplement, Transactions of the American Geophysical Union, Fall 2005 annual meeting.*
- Wobus, C.*, K.V. Hodges, K.X. Whipple and **Heimsath, A.M.**, 2005. Climate and tectonics in the central Nepalese Himalaya: Is there a connection? *Abstracts with Programs - Geological Society of America, transaction of Fall 2005 annual meeting, Vol. 37, No. 7.*
- Garvin, C.*, Hanks, T., Finkel, R.C., and **Heimsath, A.M.**, 2005. Episodic incision of the Colorado River in Glen Canyon, Utah. *Abstracts with Programs - Geological Society of America, transaction of Fall 2005 annual meeting, Vol. 37, No. 7.*
- Wobus, C.*, K.V. Hodges, K.X. Whipple and **Heimsath, A.M.**, 2005. Keynote: Climate and tectonics in the central Nepalese Himalaya: Is there a connection? Earth System Processes 2 meeting, Calgary, Canada.
- B.A. Pratt-Sitaula*, D.W. Burbank, **A.M. Heimsath**, and E. Gabet, 2005. Impacts of climate change on surface processes, Nepal Himalaya. 20th Himalaya-Karakoram-Tibet Workshop Aussois, France, April, 2005.
- M. Garde*, B.A. Pratt-Sitaula*, D.W. Burbank, M. Oskin, and **A.M. Heimsath**, 2004. Triple whammy: Mid-Holocene landslide dam yields suspended load-bedload ratio, regional erosion rate, and bedrock incision rate, central Nepal Himalaya. *EOS Supplement, Transactions of the American Geophysical Union, Fall 2004 meeting.*
- O'Farrell CR*, **Heimsath AM**, Kaste JM*, 2004. Quantifying Hillside Erosion Rates in California Over Varying Timescales. *Eos Trans. AGU, 85(47), Fall Meet. Suppl., Abstract H51C-1138.*
- Wobus, C.*, K.V. Hodges, K.X. Whipple and **Heimsath, A.M.**, 2004. Erosion and Exhumation in the Himalaya over millennial to million-year timescales. *Abstracts with Programs - Geological Society of America, transaction of Fall 2004 annual meeting.*
- Yoo, K.*, Amundson, R., **Heimsath, A.M.** and Dietrich, W.E., 2004. The Topographic Control of Chemical Weathering in Hillslope Soils. *Abstracts with Programs - Geological Society of America, transaction of Fall 2004 annual meeting.*
- Burke, B.C.* and **Heimsath, A.M.**, 2004. *INVITED*. Chemical Weathering Across A Passive Margin Escarpment, Southeastern Australia. *Abstracts with Programs - Geological Society of America, transaction of Fall 2004 annual meeting.*
- Kaste., J.M.*, **Heimsath, A.M.**, and Hamlin, A.*, 2003. Using Fallout Radionuclides and High-Resolution Survey Data to Study the Erosion of Recently Exposed Lake Deposits in New Hampshire. *EOS Supplement, Transactions of the American Geophysical Union, Fall 2003 meeting.*
- McGlynn, R.* and **Heimsath, A.M.**, 2003. Quantifying Erosion in the Nepal High Himalaya *EOS Supplement, Transactions of the American Geophysical Union, Fall 2003 meeting.*
- Pratt-Sitaula, B.A.*, Burbank, D.W., **Heimsath, A.M.**, and Putkonen, J., 2003. Significant glacial advance during Younger Dryas, Annapurna region, Nepal. *EOS Supplement, Transactions of the American Geophysical Union, Fall 2003 meeting.*
- Yoo, K.*, Amundson, R., **Heimsath, A.M.** and Dietrich, W.E., 2003. Non-steady State Soil Organic Carbon Storage in Undisturbed Watersheds Due to Diffusive Sediment Transport. *EOS Supplement, Transactions of the American Geophysical Union, Fall 2003 meeting.*
- Burke, B.C.* and **Heimsath, A.M.**, 2003. Variations in saprolite chemical weathering signatures. *Abstracts with Programs - Geological Society of America, trans. of Fall 2003 annual meeting.*

- Burke, B.C.* and **Heimsath, A.M.**, 2002. Correlations Between Chemical Weathering and Soil Production in Soil-Mantled, Upland Landscapes, Central California. *EOS Supplement, Transactions of the American Geophysical Union, Fall 2002 meeting.*
- Kaste, J.M.* and **Heimsath, A.M.**, 2002. Using Short-Lived Fallout Radionuclides to Study Soil Mixing on Hillslopes in Different Climatic and Tectonic Settings. *EOS Supplement, Transactions of the American Geophysical Union, Fall 2002 meeting.*
- Yoo, K.* , Amundson, R., **Heimsath, A.M.**, and Dietrich, W.E., 2002. The quantitative interaction between biology and hillslope soil processes: a mathematical model focusing on pocket gophers (*Geomyidae*) as soil erosion agents. *Abstracts with Programs - Geological Society of America, transaction of Fall 2002 annual meeting.*
- Burke, B.C.* and **Heimsath, A.M.**, 2002. Clay diagenesis and chemical weathering: a field example from a deep saprolite profile, central California. *Abstracts with Programs - Geological Society of America, transaction of Fall 2002 annual meeting.*
- Kaste JM*, **Heimsath A.M.** and Friedland A.J., 2001. Inferring Hillslope Hydrology from the Distribution of Fallout Radionuclides. *EOS Supplement, Transactions, American Geophysical Union. Spring 2001 meeting.*
- McGlynn, R.* and **Heimsath, A.M.**, 2001. Quantifying glacial erosion from a small alpine glacier in the Nepal Himalaya. *EOS Supplement, Transactions of the American Geophysical Union, Fall 2001 meeting.*
- Pratt, B.A.* , Burbank, D.W. and **Heimsath, A.M.**, 2001. Alluviation during strengthened Asian monsoons, central Nepal Himalaya. *EOS Transactions AGU, 82(47): 510.*
- Pratt, B.A.* , Burbank, D.W. and **Heimsath, A.M.**, 2001. Landscape disequilibrium on 1,000-10,000 year scales, Marsyandi River, Nepal, Central Himalaya. *Abstracts with Programs - Geological Society of America, 33(6): 69.*
- Yoo, K.* , Amundson, R., **Heimsath, A. M.**, and Dietrich, W E., 2001. Soil organic carbon redistribution by geomorphic processes in an undisturbed zero order annual grassland watershed, California. *EOS Transactions AGU, 82(47), Fall Meet. Supplement.*
- Kaste, J.M.* , **Heimsath, A.M.**, Friedland, A.J. 2001. Inferring Hillslope Hydrology from the Distribution of Fallout Radionuclides. *EOS Supplement, Transactions of the American Geophysical Union, Spring 2001 meeting.*
- Yoo, K* , Amundson, R., and **Heimsath, A.M.**, 2000. Soil carbon storage vs. erosion rates along two Australian toposequences. *Transactions of the Ecological Society of America Annual Meeting, Snowbird, Utah.*

Select other outreach activities

- Invited speaker**, *Quantifying Processes Governing Soil-Mantled Hillslope Evolution*. Forest Ecosystem Function Colloquium, Kyoto University, Japan, Spring 2014.
- Invited speaker**, (1) *Quantifying Landscape Evolution: Climate, Tectonics, Humans and Erosional Processes*. And, (2) *Soil, Landslides and Salmon*. UC Davis, Spring 2014.
- Invited speaker**, *Soil Production Limits and the Transition to Bedrock Landscapes*. Institute of Earth Sciences Grenoble, France; and University of Liege, Belgium, Spring 2012.
- Invited speaker**, *Soil Production Limits and the Transition to Bedrock Landscapes*. Center of Research on Petrography and Geochemistry (CRPG), Nancy, France, Spring 2011.
- Invited speaker**, *Quantifying Hillslope Processes: Holes, Isotopes, and Exploration*. Woods Hole Oceanographic Institute (WHOI), Spring 2011.
- Invited speaker**, *Eroding the Earth: Limits to Soil*. UC Berkeley, Fall 2010.
- Invited speaker**, *Eroding the Earth: Quantifying Rates & Processes*. U of Cincinnati, Spring 2010.
- Invited speaker**, *The Earth is Eroding: Quantifying Surface Processes*. U of New Mexico, Sp. 2010.

- Invited speaker**, *The Earth is Eroding ...*, Penn State University, Critical Zone Seminar, Earth and Environmental Systems Institute, Fall 2009.
- Invited speaker**, *The Earth is Eroding ...*, ASU, Department of Geography, Spring 2009.
- Invited speaker**, *Eroding Australia Slowly: Equilibrium Landscapes and the “humped” Soil Production Function*, University of Arizona, Department of Geosciences, Spring 2009.
- Invited speaker**, *Quantifying erosion rates and processes across upland landscapes*. Utah State University, College of Natural Resources, Fall 2008.
- Invited speaker**, *Rock, water, sci-soils: Roshamboing the Earth’s surface*. University of Arizona, Department of Soil, Water and Environmental Science, Spring 2008.
- Invited speaker**, *Eroding the Earth: Quantifying Surface Processes and Why We Care*, Arizona State University, School of Earth and Space Exploration, Spring 2007.
- Invited speaker**, *The Earth is Changing: Erosion and Landscape Evolution Through a Multidimensional Lens*, Univ. of California, Santa Barbara, Dept. of Geography, Spring, 2007.
- Invited speaker**, *Eroding the Earth: Quantifying Surface Processes and Why We Care*. University of Edinburgh, School of Geosciences, Spring 2007.
- Invited speaker**, *Evolving the Land: Climate, Tectonics and Erosional Processes*. University of Glasgow, Department of Geographical and Earth Sciences, Winter, 2006.
- Invited speaker**, *Cosmogenic nuclides and Earth Surface Processes*. MIT, Dept. of Earth and Planetary Sciences, Spring, 2006.
- Invited speaker**, *Eroding the Earth: Quantifying Surface Processes and Why We Care*. Johns Hopkins University, Department of Geography and Environmental Sciences, Spring, 2006.
- Invited speaker**, *The Earth is Eroding: Quantifying Rates and Processes*. Harvard University, Department of Earth and Planetary Sciences, Winter, 2006.
- Invited speaker**, *Cosmogenic Nuclides, Topography, Erosion: Field Studies in Cool Places*. University of Washington, Quaternary Research Center, Spring, 2005.
- Invited speaker**, *Erosion, Climate, Topography: tales from the field*. University of California, Santa Barbara, Department of Geological Sciences, Fall, 2004.
- Invited speaker**, *Tor Spotting, Worrying Wombats and Stochastic Processes: cosmogenic nuclides and landscape evolution*. Centre Européen de Recherche et d’Enseignement de Géosciences de l’Environnement (CEREGE), Aix-en-Provence, France. Summer, 2004.
- Invited speaker, paired talks**: *The “topography” part: Quantifying hillslope processes and rates*. And, *Untangling the land: Process studies across soil-mantled landscapes*. Stanford University, Department of Geological and Environmental Studies. Spring, 2004.
- Invited speaker**, *Tor spotting and worrying wombats: landscape evolution through a multidimensional lens*. Cornell University, Department of Geology. Winter, 2004.
- Invited speaker**, *Eroding the Land*. Pennsylvania State University, Department of Geosciences. Fall, 2003.
- Invited speaker**, *The Soil Production Function and Landscape Equilibrium*, Boston University, Department of Geology, Fall 2003.
- Invited speaker**, *Geomorphic transport laws: cosmogenic nuclides, topography, and exciting landscapes*, Columbia University, Lamont-Doherty Earth Observatory, Fall 2003.
- Invited speaker, paired talks**: *Do we care how quickly landscapes erode? And Examining erosional processes: geochemistry and field studies across landscapes*. University of Colorado, Department of Geological Sciences, Winter 2003.
- Invited speaker/scholar, paired seminars**: *Geochemistry and Erosional processes: studies of soil mantled landscapes* and *How quickly do landscapes erode?* Jan DePloey Prize, Laboratory for Experimental Geomorphology, K.U. Leuven, Belgium. Fall 2002.
- Invited speaker**, *Eroding Landscapes*. University of Vermont, Department of Geology, Fall 2002.
- Invited speaker**, *Eroding Landscapes: A Story Narrated by Cosmogenic Isotopes and Optically Stimulated Luminescence*. Florida State University, Department of Geological Sciences/Center for Earth Surface Processes Research, Spring 2002.

- Invited speaker**, *Erosion from a small alpine glacier, Central Nepal Himalaya*. Department of Hydrology and Meteorology, Kathmandu, Nepal, Fall 2001.
- Invited speaker**, *Cosmogenic nuclides, erosion, and landscape evolution*. Yale University, Department of Geology and Geophysics, Spring 2001.
- Invited speaker**, *Soil Production, bedrock erosion, and landscape evolution*. Commonwealth Science and Industrial Research Organization (CSIRO) Arid Region Research Laboratory, Spring 2000.
- Invited Speaker**, *The Soil Production Function*. Department of Geology and Geophysics, UC Berkeley, Spring Seminar Series, 1999.
- Invited speaker**, *Wombats, Soil Depth, Topography, and Cosmogenic Nuclides in Bedrock*. CSIRO Land and Water Divisional Seminar, Fall, 1997, Canberra, Australia.
- Speaker**, *Cosmogenic Nuclides and Soil Production*. Earth System Evolution Workshop, organized by The Canadian Institute for Advanced Research. July 22, 1997, The Australian National University.
- Visiting Scholar**, *The Myth of Environmental Degradation in the Himalaya*. Environment and Policy Institute, The East-West Center, University of Hawaii, Manoa. December, 1992.
- Invited Speaker**, *Anthropogenic versus natural erosion in the Nepal Himalaya*. Center for South and Southeast Asian Studies, U.C. Berkeley, Fall 1992 Speakers Program.

Synergistic/Committee Work

- 2008-2012: Associate Editor, *Earth Surface Processes and Landforms*, 2007-2012.
- 2011-2012: National Academy of Sciences/Indonesia Academia of Sciences, Frontiers of Science Symposium: Organizing Committee member.
- 2005-2007: National Academy of Sciences/Japan Society for the Promotion of Science, Frontiers of Science Symposium: Invitee (2005), Organizing Committee (2006), Co-Chair (2007).
- 2013: Invited speaker/participant: NSF-sponsored workshop for the Prediction of Landscape Response to Climatic and Land-Use Changes, Oracle, AZ.
- 2013: Invited participant: NSF-sponsored workshop for EarthCube Education End-Users.
- 2011: Invited speaker/participant: NSF-sponsored workshop for Science, Engineering, and Education for Sustainability (SEES), Minneapolis, MN.
- 2009: Invited speaker/participant: NSF-sponsored Science Initiative on Critical Zone Observatory planning and implementation, Washington, D.C.
- 2009: Invited speaker/participant: North American Luminescence Workshop, Seattle, WA.
- 2008: Invited speaker/participant: NSF-sponsored workshop on Studying Earth Surface Processes with High-Resolution Topographic Data, Boulder, CO.
- 2008: Invited Speaker/Session Chair: International Symposium on Mountain Building and Climate-Tectonic Interactions, Dehra Dun, India.
- 2012: Subject Editor: Wiley-Blackwell e-book series, *Analytical Methods in Earth and Environmental Science*.
- 2012-2013: Reviewer: NSF-Funded Textbook, editorial expert for Chapter 5, Hillslopes, *Key Concepts in Geomorphology*.
- 2012: Session Convener and Chair symposium at 34th International Geological Congress, Brisbane, Australia.
- 2008-2011: Session Convener and Chair at the American Geophysical Union (AGU) Annual Conference, San Francisco, CA.
- 2008: Technical Subcommittee member, AGU Sediment and Landscape Dynamics Group.
- 2011: Session Convener and Chair at the Goldschmidt Geochemical Annual Conference, Prague.
- 2010: Rocky Mountains Friends of the Pleistocene Annual Field Trip Coordinator and Organizer: Henry Mountains, Utah.
- 2005; 2010: Guest Editor for two special issues of *Earth Surface Processes and Landforms*, both on Quantifying Rates and Timescales of Geomorphic Processes.

2012-present: Organizer: Consortium of Climate Science Research and Education, ASU.
2012-present: Undergraduate Advisor, School of Earth and Space Exploration (SESE), ASU.
2012-present: Organizer “Camp SESE”: Field trip to welcome incoming undergraduates.
2011: Faculty Participant and helper for “Camp SESE.”
2009-2012: (Chair, 2012) Graduate Student Recruiting & Admissions, SESE, ASU.
2010-2012: Member, SESE Bylaws Committee.
2011-2012: Member, Improving SESE Committee.

Pre-ASU

2004-2006: Dartmouth Environmental Initiative: planning committee member.
2003: NSF-CAREER symposium on Research and Education, Washington, D.C.
2002-2006: Software development (with Hany Farid, Dartmouth College) for free distribution that enables topographic map generation from hand-held photographs.
2000-2005: Assisting with and appearing in two documentary films based on the collaborative research project in Nepal. Stephen Fisher directing and producing a Nova/Discovery Channel type programs.
2002-2004: Invited speaker/participant: NSF-sponsored Science Initiative on CRONUS-Earth Project – Cosmic Ray Produced Nuclide Systematics on Earth.
2000-2001: Invited participant: NSF-sponsored MARGINS Science Initiative on Source-to-Sink: planning symposia.
2004-2007: Member, Dickey Center for International Learning Steering Committee.
2004-2007: Member, Dartmouth Venture Fund Review Committee.
2002-2007: Member, Dartmouth Committee for Off-Campus Activities.

Professional Affiliations/Membership

American Geophysical Union
Geological Society of America
Sigma Xi – The Scientific Research Society
The Geochemical Society
Union of Concerned Scientists

Referee for the following selected **journals**:

Science, Nature, Geology, Earth and Planetary Sciences Letters, GSA Bulletin, American Geophysical Union Monographs, American Journal of Science, Environmental Science and Technology, Geomorphology, Annals of the Association of American Geographers, Catena, Journal of Geophysical Research – Earth Surface, Earth Surface Processes and Landforms (also as Associate Editor), Water Resources Research, Geoderma, Geochimica et Cosmochimica Acta

Referee for the following **funding agencies**

US National Science Foundation, American Chemical Society, Arizona Geological Society, Austrian Science Foundation, Danish Agency of Sciences, US Dept. of Agriculture, NASA, Australian Research Council, Switzer Foundation/New Hampshire Charitable Trust, National Geographic, IGPP.

Courses Taught and Offered

At Arizona State University

Geology 101: *Introduction to Earth Sciences*
ASU 101: *Humans and the Environment*
Geology 108 (including lab): *The Water Planet* (w/ K. Whipple)
School of Sustainability 110: *The Sustainable World*

SES 191: *Exploring SESE*
SES 191: *Humans and the Environment*
Geology 327: *Earth's Critical Zone*
Geology 490: *Weathering, Diagenesis, and Alteration* (w/ E. Shock)
Geology 494 (including lab): *Advanced Geomorphology* (w/ K. Whipple)
Geology 591: *Advanced Geomorphology Seminar: Current Topics*

At Dartmouth College

Earth Sciences 2: *Earth History*
Earth Sciences 7: *Humans and the Environment*
Earth Sciences 33 (including lab): *Earth Surface Processes and Landforms*
Earth Sciences 88: *Culminating Experience Seminar*
Earth Sciences 110, *Watershed Processes (Graduate and upper division undergraduate)*
Earth Sciences 121 and 122: *Graduate Seminar in Geomorphology*
Earth Sciences 46 (STRETCH); *Field Geomorphology (off-campus, taught in California).*

Student Theses Supervised

Graduate (*primary advisor)

Andy Darling, Marina Foster (PhD candidates)

Matt Jungers* (PhD, 2014): Post-Tectonic Landscape Evolution of Sedimentary Basins in Southeastern Arizona and Northern Chile.

Matt Rossi (PhD, 2014): Hydroclimatic controls on erosional efficiency in Mountain Landscapes.

Byron Adams (PhD, 2014): Tectonic and Climatic Influence on the Evolution of the Bhutan Himalaya.

Wendy Bohon (PhD, 2014):

Erin DiMaggio (PhD, 2013):

Roman DiBiase* (PhD, 2011): Tectonic Geomorphology of the San Gabriel Mountains, CA.

Nathan Toke (PhD, 2011): Earthquake Geology, Hazard, Urban Form, and Social Vulnerability.

Jean Dixon* (PhD, 2008): Coupling Climate with Erosion: Quantifying Erosion Rates and Processes Along Climate Gradients.

Ben Burke* (PhD, 2006): Examining Chemical Weathering in Soil Mantled Landscapes.

Jim Kaste* (PhD, 2003): Tracing the retention and redistribution of Pb and other particle-reactive atmospheric fallout in soils.

Joseph Walsh (MS, 2011): ^{137}Cs and ^{210}Pb in the San Gabriel Mountains, California: Erosion Rates, Processes and Implications.

David Haddad (MS, 2010): Geologic and Geomorphic Characterization of Precariously Balanced Rocks.

Elizabeth Johnson (MS, 2008): Rock Matters: Lithologic Controls on Landscape Evolution.

Colin O'Farrell (MS, 2005): Quantification of Non-glacial Sediment Inputs to the Glacial Sediment Budget of the Matanuska Glacier, Alaska.

Cris Garvin (MS, 2004): Determining Incision Rates of the Colorado River in Glen Canyon Using Cosmogenic, U-series and OSL Methods.

Robert McGlynn (MS, 2003): Headwall retreat in the Nepal Himalaya.

Undergraduate

Joseph Walsh (BS, 2009): Quantification of erosion through soil transport in two transects from the San Gabriel Mountains using Pb210 and Cs137 measurements.

Carmen Springer (BS, 2007): The Anthropogenic Effects on Increased Sedimentation Rates from Off-Road Vehicle Use in the Union Valley Watershed.

Laura Jorgenson (BS, 2005): Quantifying Non-glacial Suspended Sediment Flux into the Matanuska Glacier, Alaska.

Deane Sommerville (BS, 2005): Landslide quantification using hand-held digital photogrammetry.
Alex Hamlin (BS, 2003): Nose Job: A Study of Hillslope Morphology and Sediment Transport Laws on the Noses of Storr's Pond, NH.
Colin O'Farrell (BS, 2003): Quantification of short-term hillside erosion rates in coastal California.
Emily Leshar (BS, 2002): Landscape Development of the Santa Cruz Marine Terraces, California: a Test of Landscape Age.

External Advisor/Examiner:

Suresh Othayoth (PhD, 2013, Macquarie University, Australia)
Kristen Cook (PhD, 2008, MIT)
Beth Pratt-Situala (PhD, 2005, University of California, Santa Barbara)
Cameron Wobus (PhD, 2005, MIT)
Kyungsoo Yoo (PhD, 2004, University of California, Berkeley)

Undergraduate Lab Interns

2001: Emily Leshar, Tim Bartholomaeus, Sora Kim, Alex Hamlin
2002: Allette Vayda, Ephraim Taylor, Deane Somerville, Vaibhav Rajan
2003: Laura Jorgensen, Lisa Melvin, Marta Darby, Barry Hashimoto
2004: Oceana Castaneda, Chris Farmer, Cara Foster, Paul Mozur, Alicia Cruz-Uribe
2005: Iona Woolmington, Sam Rust, Jonathan Kroft, Sarah Rosa, Elijah Rosen
2006: Elijah Rosen, James Marlow, Pam Phojanakong, Sam Rust
2008: Joseph Walsh, Allie Stern, Sean deBruin
2009: Joseph Walsh, Allie Stern, Sean deBruin
2010: Sean deBruin, David deBruin
2011: David deBruin, Aaron Sanders
2012: David deBruin
2013: Joel Leonard