DARRYL E. GRANGER

Professor
Department of Earth Atmospheric and Planetary Sciences
Purdue University

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PRINCIPAL RESEARCH INTERESTS

Cosmogenic nuclides applied to problems of landscape evolution, tectonic geomorphology, karst geomorphology, and archaeology, paleontology, and paleoanthropology.

EDUCATION

1996	Ph.D.	Geology, University of California, Berkeley
1991	B.S.	Physics and Scientific Instrumentation, Carnegie Mellon University

APPOINTMENTS

2019-present	Affiliated professor, Dept. of Geography, Nanjing Normal University, China
2018-2019	Interim Head, Department of Earth and Atmospheric Sciences, Purdue University
2008-present	Professor, Department of Earth and Atmospheric Sciences, Purdue University
2002-2008	Associate Professor, Department of Earth and Atmospheric Sciences, Purdue University
1996-2002	Assistant Professor, Department of Earth and Atmospheric Sciences, Purdue University

AWARDS, HONORS, AND RECOGNITION

International, National, and Society
Fellow, American Geophysical Union, 2021
Taylor-Francis Distinguished Lecturer, Association of American Geographers, 2015
Wiley Award for best paper, British Society for Geomorphology, 2013 (with C. Riebe)
Fellow, Geological Society of America, 2011
NSF early career development (CAREER) award, 2001
NASA Global Change Fellow, 1992-1995

University
Research Award, Purdue College of Science, 2017
Purdue Seeds for Success Award (for grants in excess of $1M)

Departmental
EAS outstanding graduate student advisor, 2005
EAS outstanding teacher award, 2000

PROFESSIONAL AND SCHOLARLY ASSOCIATIONS

American Geophysical Union
Geological Society of America
National Speleological Society
Geochemical Society

PUBLICATIONS *(peer-reviewed; students and postdoctoral researchers underlined)*

[90] Kuman, K., Granger, D. E., Gibbon, R. J., Pickering, T. R., Caruana, M. V., Bruxelles, L., Clarke, R. J., Heaton, J. L., Stratford, D., and Brain, C. K. (2021) A new absolute date from Swartkrans Cave for the oldest occurrences of *Paranthropus robustus* and Oldowan stone tools in South Africa, *Journal of Human Evolution* 156, 103000, 12 p.

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[87] Odom, W., Hofmann, F., Van Arsdale, R., & Granger, D. (2020). New ^{26}Al/^{10}Be and (U-Th)/He constraints on the age of the Upland Complex, central Mississippi River Valley. *Geomorphology, 371*, 107448.

[86] Shen, G., Wang, Y., Tu, H., Tong,, H. Wu, Z., Kuman, K., Fink, D., and Granger, D. (2020) Isochron ^{26}Al/^{10}Be burial dating of Xihoudu: Evidence for the earliest human settlement in northern

China. *L'Anthropologie*, 124, no. 5 (2020): 102790.
[85] Luo, L., Granger, D. E., Tu, H., Lai, Z., Shen, G., Bae, C. J., Ji, X., & Liu, J. (2020) The first radiometric age by isochron ^{26}Al/^{10}Be burial dating for the Early Pleistocene Yuanmou hominin site, southern China. *Quaternary Geochronology*, 101022.
[84] Moore, A. K., & Granger, D. E. (2019) Watershed-averaged denudation rates from cosmogenic ^{36}Cl in detrital magnetite. *Earth and Planetary Science Letters*, *527*, 115761.
[83] Aslan, A., Karlstrom, K. E., Kirby, E., Heizler, M. T., Granger, D. E., Feathers, J. K., Hanson, P.R., & Mahan, S. A. (2019) Resolving time-space histories of Late Cenozoic bedrock incision along the Upper Colorado River, USA. *Geomorphology*, 106855.
[82] Frisbee, M.D., Meyers, Z.P., Miller, J.B., Gleason, C.L., Stewart-Maddox, N.S., Larson, E.B., Granger, D.E., Saksena, S., Dey, S. and Frisbee, E.E., (2019) Processes leading to the re-activation of a sinkhole in buried karst and the subsequent drying of waterfalls in a small catchment located in northern Indiana, USA, *Journal of Cave & Karst Studies*, *81*(2).
[81] Guo, Y., Sun, C., Luo, L., Yang, L., Han, F., Tu, H., Lai, Z., Jiang, H., Bae, C. J., Shen, G., and Granger, D. (2019) ^{26}Al/^{10}Be burial dating of the Middle Pleistocene Yiyuan hominin fossil site, Shandong Province, northern China, *Scientific Reports*, 9, 6961.
[80] Schachtman, N., Roering, J., Marshall, J., Gavin, D., and Granger, D. (2019) The interplay between physical and chemical erosion over interglacial-glacial timescales, *Geology*, 47, 613-616.
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[78] Leader, G.M., Kuman, K., Gibbon, R.J., and Granger, D.E. (2018) Early Acheulean organised core knapping strategies ca. 1.3 Ma at Rietputs 15, Northern Cape Province, South Africa, *Quaternary International*, v. 480, p. 16-28.
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[76] Zhao, Z., Granger, D. E., Chen, Ye, Shu, Q., Liu, G., Zhang, M., Hu, X., Wu, Q., Hu, E., Li, Y., Yan, Y., and Qiao, L. (2017) Cosmogenic nuclide burial dating of an alluvial conglomerate sequence: An example from the Hexi corridor, NE Tibetan Plateau, *Quaternary Geochronology*, v. 39, p. 68-78.
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Cape province, South Africa. *Geoarchaeology* 1-20. doi :10.1002/gea.21541.

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[2] Granger, D. E., Kirchner, J. W., and Finkel, R. C., (1997) Quaternary downcutting rate of the New River, Virginia, from differential decay of ^{26}Al and ^{10}Be in cave-deposited sediment, *Geology*, v. 25, p. 107-110.

[1] Granger, D.E., Kirchner, J. W., and Finkel, R., (1996) Spatially averaged long-term erosion rates measured from in-situ produced cosmogenic nuclides in alluvial sediment, *Journal of Geology*, v. 104, p. 249-257.

Books, book chapters, and field guides

[b9] Granger, D. E., and Fabel, D., (2019) Dating Cave Sediments with cosmogenic nuclides, in White, W., and Culver, D., eds., *Encyclopedia of Caves (3rd edition)*, Elsevier Academic Press.

[b8] Schulze, D. G., Olson, C., Granger, D., and Konen, M., (2018) The Pleistocene at your fingertips: Glacial lake outburst flood deposits and patterned ground in the central Wabash Valley, Field Trip guidebook, GSA Annual Meeting, Indianapolis.

[b7] Reiners, P.W., Carlson, R.W., Renne, P.R., Cooper, K.M., Granger, D.E., McLean, N.M. and Schoene, B., 2017. *Geochronology and Thermochronology*. John Wiley & Sons, 480 p.

[b6] Granger, D. E., and Riebe, C. S., (2014) Cosmogenic nuclides in weathering and erosion, in Drever, J. I., ed., *Surface and Ground Water, Weathering and Soils*, Volume 7 in Turekian, K. K., and Holland, H.D., eds., *Treatise on Geochemistry*, Elsevier-Pergamon, Oxford , p. 401-436.

[b5] Granger. D. E., Cosmogenic nuclide burial dating in archaeology and paleoanthropology (2014), in Cerling. T. E. ed., *Archaeology and Anthropology*, Volume 14 in Turekian, K. K., and Holland, H.D., eds., *Treatise on Geochemistry*, Elsevier-Pergamon, Oxford, p. 81-97.

[b4] Granger, D..E. (2013) Cosmogenic nuclides and landscape evolution, in Elias, S., *Encyclopedia of Quaternary Sciences (2nd edition)*, Elsevier, Oxford, p. 440-445

[b3] Granger, D. E., and Fabel, D., (2007) Cosmogenic Isotope Dating of Cave Sediments, in White, W., and Culver, D., eds., *Encyclopedia of Caves (2nd edition)*, Elsevier Academic Press.

[b2] Granger, D. E., (2006) Cosmogenic nuclides and landscape evolution, in Elias, S., *Encyclopedia of Quaternary Sciences*, Elsevier, Oxford.

[b1] Granger, D. E., and Fabel, D., (2005) Dating cave sediments with cosmogenic nuclides in White, W., and Culver, D., eds., *Encyclopedia of Caves*, Elsevier Academic Press, p. 137-141.

Comments and replies, proceedings, and non-refereed

[c6] Stratford, D., Granger, D.E., Bruxelles, L., Clarke, R.J., Kuman, K., and Gibbon, R.J., (2017) Comments on 'The age of fossil StW573 (Little Foot): An alternative interpretation of ^{26}Al/^{10}Be burial data', *South African Journal of Science*, v. 113, Scientific Correspondence, p. 1-3.

[c5] Wu, Q., Zhao, Z., Liu., L., Granger, D. E., Wang, H., Cohen, D. J., Wu, X., Ye, M., Bar-Yosef, O., Lu, B., Zhang, J., Zhang, P., Yuan, D., Qi, W., Cai, L., and Bai, Shibao (2017) Response to comments on "Outburst flood at 1920 BCE supports historicity of China's Great Flood and the Xia dynasty", *Science*, v. 355, p. 1382.

[c4] Kadlec, J., Bella, P., Čižková, K., Granger, D. E., Hercman, H., Holúbek, P, Chadima, N., Orvošová, M., Pruner, P. Schnabl, P, and Šlechta, S., Valley incision in the Nizke Mts. (Slovakia) based on paleomagnetic and radiometric cave sediment datings, 2013 ICS Proceedings, p. 94-95.

[c3] Karlstrom, K., Darling, A., Crow R., Lazear, G., Aslan, A., Granger, D., Kirby, E., Crossie, L, and Whipple, K., (2013) Colorado River chronostratigraphy at Lee's Ferra, Arizona, and the Colorado Plateau bull's-eye of incision: COMMENT, *Geology*, v. 41, p. e303.

[c2] Granger, D. E. and Wolkowinsky, A. J., (2005) Early Pleistocene incision of the San Juan River, Utah, dated with ^{26}Al and ^{10}Be: REPLY, *Geology Forum*.

[c1] Granger, D. E., and Palmer, A. N. (1997) A proposed method for determining the age and origin of the Mammoth Cave system*: Proceedings of the Sixth Annual Mammoth Cave Science Conference, Mammoth Cave National Park, July 31-August 1, 1997, p. 145-150.*

INVITED LECTURES

Professional meetings

[24] Granger, D. E., (2019) Cosmogenic nuclide dating applied to human evolution: recent results from Africa and China. Invited talk, Shantou workshop on human evolution in Asia.

[23] Granger, D.E., Odom, W.E., and Fabel, D. (2018) A re-evaluation of the timing of Mammoth Cave development and formation of the Ohio River. Invited talk, GSA Annual Meeting.

[22] Keen-Zebert, A., Granger, D. E., Paces, J. B., Hudson, M. R., Bitting, C., (2016), Combined use of cosmogenic nuclide, U-series disequlibrium, paleomagnetism, and optically stimulated

luminescence within Fitton Cave to evaluate the landscape evolution of the Buffalo National River, Arkansas (Invited presentation). GSA Fall Meeting, Denver.

[21] Granger, D., Marshall, J., Roering, J., Zhao, Z., and Laureano, F. (2016) KEYNOTE: Paleo-erosion rates with cosmogenic nuclides: A synthesis of erosion and climate over million-year timescales. *Goldschmidt conference*, Yokohama, Japan.

[20] Granger, D. E., Caffee, M. W., Zhao, Z.-J., and Odom, W. (2015) High precision isochron burial dating using a gas-filled magnet, *GSA Annual Meeting (invited talk),* Baltimore, Maryland.

[19] Granger, D. E. (2015) From landscape evolution to human evolution, Taylor-Routledge distinguished lecture, American Association of Geographers Annual Meeting, Chicago, Illinois.

[18] Granger, D. E., Caffee, M. C., and Woodruff, T. E. (2014) A tenfold increase in ^{26}Al currents at PRIME Lab, *GSA Annual Meeting,(invited talk)*, Vancouver, Canada.

[17] Granger, D. E., (2011) Burial dating: traditional and novel approaches, *ESF-LFUI Research conference on cosmogenic nuclides (invited talk),* Obergürgl, Austria.

[16] Granger. D. E. (2011) Evolution of Hang Son Doong, Vietnam: the largest cave passage in the world *(Invited talk) AGU Fall Meeting*, San Francisco, California.

[15] Granger, D. E., Erlanger, E., and Gibbon, R. J. (2010) Paleo-erosion rates from an isochron cosmogenic nuclide method: A 4 My erosion chronosequence from South Africa, *AGU Fall Meeting*, San Francisco, California.

[14] Granger, D. E. and Shen, G. J., (2009) A quantitative assessment of cosmogenic burial dating at Zhoukoudian Locality 1 and implications for cave sedimentation and hominid environments, (keynote lecture) *International symposium on paleoanthropology in commemoration of the 80th anniversary of the discovery of the first skull of Peking Man and the first Asian conference on Quaternary Research*, Beijing, China,

[13] Granger, D. E., Balco, G., and Shen, G.J., (2009) Isochron burial dating with ^{26}Al and ^{10}Be: Applications from landscape evolution to human evolution (invited keynote lecture), *Goldschmidt Conference*, Davos, Switzerland

[12] Granger, D. E. and Cyr, A. J., (2006) Comparing erosion rates from ^{10}Be with other methods in the northern Apennines, Italy: Evidence for dynamic equilibrium (invited talk), *AGU Fall meeting,* San Francisco, California.

[11] Granger, D. E., (2006) Deciphering exposure-burial histories with multiple cosmogenic nuclides (invited Wiley lecture—1 hour opening keynote) *Quaternary Research Association meeting*, Glasgow, Scotland.

[10] Granger, D. E., Cyr, A. J., and Partridge, T. C. (2006) Quantitative tests of cosmogenic nuclide burial dating accuracy (invited talk), *Goldschmidt conference,* Melbourne, Australia.

[9] Granger, D. E., (2005) Perspectives on burial dating with cosmogenic nuclides (invited keynote lecture), Goldschmidt Conference, Moscow, Idaho.

[8] Granger, D. E., and Haeuselmann, P. (2004) Using cosmogenic ^{26}Al and ^{10}Be to date 4 million years of glacial valley lowering in Switzerland (invited talk), *32nd International Geological Congress, Florence, Italy, August 20-28, 2004*.

[7] Granger, D. E., (2002) Spatially averaged erosion rates from cosmogenic nuclides: Ten years later, (invited keynote lecture) *Goldschmidt Conference, Geochimica et Cosmochimica Acta,* v. 66, no. S1, p. A288. Goldschmidt Conference, Davos, Switzerland.

[6] Caffee, M. C., Elmore, D., Granger, D. E., and Muzikar, P. (2002) Purdue Rare Isotope Measurement Laboratory (invited poster), *EOS, Transactions of the American Geophysical Union,* 83 (47): F19.

[5] Granger, D. E., (2001) How fast do caves form? Insights from sediment dated with cosmogenic ^{26}Al and ^{10}Be (invited talk),*GSA Annual Meeting, Fall, 2001*.

[4] Granger, D. E., (2000) Dating sediment burial by radioactive decay of cosmogenic Al-26 and Be-10: Techniques and uncertainties (invited talk), *Abstracts with Programs, Geological Society of America Annual Meeting*, v. 32, no. 7, p. A-400.

[3] Granger, D. E., (2000) Three million years of steady hilltop erosion in Kentucky inferred from ^{26}Al and ^{10}Be in quartz sediments (invited talk), *EOS, Transactions of the American Geophysical Union*, v. 81, no. 48, p. F34.

[2] Granger, D. E., and Fabel, D., (1998) Age of sediments in the Mammoth Cave system (invited talk), *UNESCO's International Geological Correlation Program Project 379: Karst Processes and the Global Carbon Cycle*, September 23-25, Bowling Green, Kentucky.

[1] Granger, D. E., Kirchner, J. W., and Riebe, C. S., (1997) Inferring exhumation rates and processes from cosmogenic nuclides in sediment (invited talk), *Abstracts with Programs, Geological Society of America Annual Meeting*, v. 29, no. 6, p. A-420.

University seminars and colloquia
[50] GFZ Potsdam (virtual), November 2021
[49] Nanjing Normal University, China, May 2019
[48] Indiana Geological Survey, May 2019
[47] China University of Geosciences, Wuhan, June 2017
[46] Dorr Lecture, University of Michigan, March 2017
[45] Purdue University President’s colloquium, December 2016
[44] University of Colorado, October 2016
[43] Purdue University, February 2016
[42] China University of Geosciences, Wuhan, July 2015
[41] China Earthquake Administration, Beijing, July 2015
[40] Oregon State University, 21 May 2015
[39] University of Nevada, Las Vegas, 17 October 2012
[38] University of Chicago, 28 January 2011
[37] University of Oregon, 23 June 2010
[36] University of Wyoming, 23 November 2009
[35] Lanzhou University, China, 27 October 2009
[34] The Pennsylvania State University, 7 April 2009
[33] Indiana University-Purdue University, Indianapolis (IUPUI), 4 April 2009
[32] Purdue University, Dept of Anthropology, 9 February 2009
[31] University of Illinois, Urbana-Champaign, 30 November 2007
[30] Institute for Earth Environment, Xi’an, China, 15 October 2007
[29] Indiana University, 5 March 2007
[28] Peking University, P.R. China, 14 August 2006
[27] Università di Roma 3, Italy, 11 January 2006
[26] University of South Carolina, 11 April 2005
[25] University of Illinois, Chicago, 7 April 2005
[24] Miami University of Ohio, 27 October 2004
[23] Università di Siena, Italy, 9 June 2004
[22] Cornell University, 2 December 2003
[21] Texas A&M University, 13 April 2003
[20] University of Arizona, 20 April 2001
[19] Yale University, 21 March 2001
[18] Massachusetts Institute of Technology, 16 March 2001
[17] University of Cincinnati, 28 April, 2000
[16] Lehigh University, 24 February, 2000
[15] University of Kansas, 28 January, 2000
[14] Princeton University, 11 April, 1999
[13] University of Illinois at Urbana Champaign, 18 September, 1998
[12] University of Illinois at Chicago, 10 September, 1998
[11] Purdue University, 3 September, 1998
[10] Ball State University, 15 February, 1998

[9] University of California, Santa Cruz, 24 September, 1996
[8] University of California, Berkeley, 5 September, 1996
[7] University of Washington, 7 May 1996
[6] University of California, Berkeley, Isotope Geochemistry Seminar, 4 April 1996
[5] Virginia Polytechnic Institute, 25 March 1996
[4] University of Maryland, 16 March 1996
[3] University of California, Berkeley, Climate seminar, 1 December 1995
[2] Purdue University, 3 November 1995
[1] VPI Cave Club, (National Speleological Society), 15 September, 1995

CONTRIBUTED PRESENTATIONS

[113] Granger, D. E., Odom, W., and McAleer, R. (2021) Late Cenozoic river incision, erosion, and relief generation in the southern Appalachians, New River Valley, Virginia. AGU Fall Meeting, New Orleans.

[112] Rogers, E. & Granger, D. E. (2021) A revised map of Glacial Lake Tight and abandoned drainage networks in Ohio, West Virginia, and Kentucky reveals glacial isostatic tilting at 1.3 Ma. AGU Fall Meeting, New Orleans.

[111] Odom, W. & Granger, D. E. (2021). The Pliocene-to-present course of the Tennessee River revealed by cosmogenic 26Al/10Be burial dating. AGU Fall Meeting, New Orleans.

[110] Rogers, E. R., & Granger, D. E. (2020). A NEW RECONSTRUCTION OF PLEISTOCENE LAKE TIGHT SHOWING GLACIAL ISOSTATIC FLEXURE AT 1.3 MA. In *North-Central Section-54th Annual Meeting-2020*. GSA.

[109] Gehringer, H. M., & Granger, D. E. (2020). GLACIAL AND POSTGLACIAL GEOMORPHOLOGY OF TIPPECANOE COUNTY, INDIANA. In *North-Central Section-54th Annual Meeting-2020*. GSA.

[108] Granger, D. E., Caffee, M. W., Lifton, N. A., & Moore, A. K. (2019) Precise Determination of the $^{26}Al/^{10}Be$ Production Rate Ratio, AGU Fall Meeting, San Francisco, California.

[107] Hu, K., Fang, X., Ferrier, K., Granger, D. E., Zhao, Z., & Ruetenik, G. (2019) Drainage basin reorganization in the Qilian Shan, NE Tibet, AGU Fall Meeting, San Francisco, California.

[106] Kirby, E., Furlong, K. P., Aslan, A., Karlstrom, K. E., & Granger, D. E. (2019) TIMING AND DURATION OF INCISION ALONG THE COLORADO RIVER NEAR RIFLE, CO SUGGEST A TECTONIC DRIVER FOR POST-10 MA LANDSCAPE EVOLUTION, GSA Annual Meeting, Phoenix, Arizona.

[105] Aslan, A., Heizler, M., Karlstrom, K. E., Granger, D. E., & Martin, E. (2019) DETRITAL SANIDINE AND COSMOGENIC BURIAL AGE CONSTRAINTS SUPPORT POST-2 MA INTEGRATION OF THE UPPER GREEN RIVER ACROSS THE UINTA MOUNTAINS, GSA Annual Meeting, Phoenix, Arizona.

[104] Odom, W. E., Granger, D. E., & Doctor, D. H. (2019) DATING A MID-PLIOCENE AGGRADATIONAL EPISODE AND SUBSEQUENT RIVER INCISION IN THE SHENANDOAH VALLEY WITH COSMOGENIC 26 AL AND 10 BE, GSA Annual Meeting, Phoenix, Arizona.

[103] Odom, W. E., Granger, D. E., & Wallace, S. C. (2019) AN INDEPENDENT CONSTRAINT ON THE AGE OF THE GRAY FOSSIL SITE, TN USING COSMOGENIC NUCLIDE BURIAL DATING ON A 35-M-DEEP CORE, GSA Annual Meeting, Phoenix, Arizona.

[102] Shen, G.J., Tu, H., Zhao, J., and Granger, D.E., (2019) Current status and perspectives of chronological studies of paleoanthropological sites in China, Asia Pacific Conference on Human Evolution (APCHE), Brisbane, Australia.

[101] Granger, D. E., Shen, G.J., Kuman, K., (2019) Cosmogenic nuclide isochron burial dating of the Xihoudu paleolithic site, northern China, Asia Pacific Conference on Human Evolution (APCHE), Brisbane, Australia.

[100] Hu, K., Fang, X., Ferrier, K., Granger, D.E., and Zhao, Z. (2018) Drainage basin reorganization in the upper Hei River basin, northern Qilian Shan, Tibet, AGU Fall meeting.

[99] Roering, J.J., Schachtman, N.S., Marshall, J.A., Gavin, D.G., and Granger, D.E. (2018) Denudation, chemical weathering, and critical zone structure through the last glacial-interglacial transition, AGU Fall Meeting.

[98] Han, F., Yin, G., Gu, Z., and Granger, D.E. (2018) Isochron 26Al/10Be burial dating of Yellow River gravel terraces at Shapotou, China. GSA Annual Meeting.

[97] Odom, W.E., and Granger, D.E. (2018) Isochron burial dating of Plio-Pleistocene terrace deposits along the lower Tennessee River. GSA Annual Meeting.

[96] Moore, A.K., Granger, D.E., and James, C., Catchment-averaged denudation rates from ^{36}Cl in magnetite: evaluation and application to an andesitic landscape, American Geophysical Union Fall Meeting, New Orleans, 2017.

[95] Marshall, J.A., Roering, J.J., Schachtman, N.S., Gavin, D.G., and Granger, D.E., Late Quaternary shifts in climate-controlled soil weathering mechanisms in unglaciated western Oregon, American Geophysical Union Fall Meeting, New Orleans, 2017.

[94] Odom III, W.E., and Granger, D.E., Dating terrace deposits along the Tennessee River using cosmogenic ^{26}Al and ^{10}Be, Geological Society of America Annual Meeting, Seattle, 2017.

[93] Odom III, W.E. and Granger, D.E., Photovoltaic silicon panels as artificial targets for ^{26}Al production, 14th International Conference on Accelerator Mass Spectrometry, Ottawa, Canada, 2017.

[92] Granger, D.E., Shen, G.-J., Tu, H., and Kuman, K., Isochron burial dating applied to archaeology and human evolution14th International Conference on Accelerator Mass Spectrometry, Ottawa, Canada, 2017.

[91] Moore, A.K. and Granger, D.E., ^{36}Cl production rate from Fe, 14th International Conference on Accelerator Mass Spectrometry, Ottawa, Canada, 2017.

[90] Caffee, M. C., Granger D. E., Moore, A.K., Odom III, W.E., and Ruleman, C., Precise measurement of the ^{26}Al/^{10}Be production rate ratio from glacial moraine boulders at mid-latitudes, USA, 14th International Conference on Accelerator Mass Spectrometry, Ottawa, Canada, 2017

[89] Moore, A. K., and Granger, D. E., Validating erosion rates from ^{36}Cl in magnetite, GSA Fall Meeting, Denver, 2016.

[88] Odom III, W. E., and Granger, D. E., Deep weathering products as Appalachian landscape markers: Did Neogene uplift occur? GSA Fall meeting, Denver, 2016.

[87] Caffee, M., Granger, D. and Woodruff, T., Advances in Accelerator Mass Spectrometry: Gas-Filled-Magnet. *Goldschmidt conference*, Yokohama, Japan, 2016.

[86] Moore, A.K., Granger, D. E., and Laureano, F. V., COSMOGENIC ^{36}CL IN MAGNETITE: A NEW TOOL FOR EROSION RATES, GSA Fall Meeting, 2015.

[85] Odom III, W. E., and Granger, D. E., CALIBRATING ^{26}AL PRODUCTION USING SOLAR PANELS, GSA Fall Meeting, 2015.

[84] Caffee, M.W., Granger, D. E., and Woodruff, T. E., The gas-filled-magnet at PRIME Lab: Increased sensitivity of cosmogenic nuclide measurements. AGU Fall meeting 2015.

[83] Roering, J. J., Marshall, J. A., Granger, D. E., Fox, M., Gavin, D., and White, L, Using a paleo perspective to decipher climate controls on erosion and landscape evolution. AGU Fall Meeting 2015.

[82] Lotter, M., Kuman, K., Gibbon, R., Granger, D., (2014) The archaeology of the lower Sundays River valley, Eastern Cape Province, South Africa: An assessment of Earlier Stone Age alluvial terrace sites, PanAfrican Archaeological Association Meeting, Johannesburg, South Africa.

[81] Caffee, M., Granger, D., Jackson, G., Kubley, T., Lifton, N., Miller, T., Muzikar, P., Woodruff, T., Accelerator Mass Spectrometry at Purdue University: Improvements to PRIME Lab, AMS-13, Aix-en-Provence, France.

[80] Granger, D., Riebe, C., Moore, A., Rogers, H., Lifton, N., Production rate of ^{10}Be in magnetite, AMS-13, Aix-en-Provence, France.

[79] Chmiel, G., Clifton, T., Granger, D., Caffee, M. (2014) Quartz sample preparation and chemistry at PRIME Lab, AMS-13, Aix-en-Provence, France.

[78] Marshall, J.A., Roering, J. J., Bartlein, P. J., Praskievicz, S., Gavin, D. G., Hales, T. C., and Granger, D. E., (2014) Does temperature (rather than precipitation) dictate the geomorphic legacy of glacial intervals in mid-latitude unglaciated terrains? *AGU Fall Meeting, San Francisco*.

[77] Granger, D. E., Reid, C. R., and Riebe, C. S. (2013) Exhumation of the Granite Mountains, Wyoming, from cosmogenic dipstick dating, *GSA Cordilleran Section Annual Meeting, Fresno.*

[76] Robertson, J., Karlstrom, K. E., Huntoon, P., Warme, J. E., Crow, R. S., Darling, A., and Granger, D. E., Deep-seated bedrock landsliding in Grand Canyon: Implications for canyon evolution, *GSA Annual Meeting, Denver*.

[75] Crow, R., S., Karlstrom, K. E., Darling, A., Crossey, L. J., Polyak, V. J., Granger, D. E., Asmerom, Y., and Schmandt, B., (2013) Mantle buoyancy-driven differential incision of the Grand Canyon, *GSA Annual Meeting, Denver*.

[74] Granger, D. E., Rogers, H. E., Riebe, C. S., and Lifton, N. A. (2013) Production rate of cosmogenic 10Be in magnetite, *AGU Fall Meeting, San Francisco*.

[73] Rogers, H. E., Riebe, C. S., and Granger, D. E. (2013) Cosmogenic 10Be in quartz and magnetite: Using the same nuclide in multiple minerals to quantify differential weathering, *AGU Fall Meeting, San Francisco*.

[72] Marshall, J. A., Roering, J. J., Granger, D. E., and Gavin, D. G. (2013) A 50-ky record of climate, ecosystem, and erosion rate change in the Oregon Coast Range, *AGU Fall Meeting, San Francisco*.

[71] Hu, K., Fang, X., Granger, D. E., and Zhao, Z. (2013) Be-10 derived basin-wide erosion rates in the southern Qilian Shan, NE Tibet, *AGU Fall Meeting, San Francisco*.

[70] Granger, D. E. and Conyers, G. (2012) The importance of hickory trees (*Carya*) in biogeochemical cycling of ^{10}Be, contributed talk, *Goldschmidt Conference*, Toronto.

[69] Granger, D. E., and Muzikar, P. (2011) Isochron burial dating of fluvial gravel deposits, contributed talk, AMS-12, Wellington New Zealand.

[68] Caffee, M., Granger, D., Lifton, N., and Muzikar, P. (2011) Accelerator Mass Spectrometry at Purdue University PRIME Lab, contributed talk, AMS-12, Wellington New Zealand.

[67] Granger, D., Chmiel, G., and McKenzie, E. (2011) Preparation of aluminum metal targets for AMS analysis, contributed poster, AMS-12, Wellington, New Zealand.

[66] Wang, G., Michalski, G., Seo, J.-H., Granger, D., and Caffee M. W. (2011) Cl dating of soil formation in the hyper-arid Atacama desert, Chile, contributed talk, *GSA Annual Meeting*, Minneapolis.

[65] Zhao, Z., Granger, D. E., Zhang, M., Hu, E., Yan, Y., and Li, Y. (2011) A 4-million year record of paleo-erosion rates from the Qilian Shan, China, contributed talk, *GSA Annual Meeting*, Minneapolis.

[64] Riebe, C. S., and Granger, D. E., Effects of Chemical Erosion on Cosmogenic Nuclide Buildup in Soils, Saprolite and Sediment (contributed poster) *AGU Fall Meeting, San Francisco.*

[63] Conyers, G., and Granger, D. (2011) Do fungi transport ^{10}Be during wood degradation? (contributed talk), *GSA North-Central Sectional Meeting,* Pittsburgh.

[62] Darling, A. L., Karlstrom, K. E., Granger, D. E., Aslan, A., Kirby, E., Ouimet, W. B., Coblentz, D. D., CREST Working Group (2010) New incision rates along the Colorado River system based on cosmogenic burial dating of terraces: implications for regional controls on differential incision, contributed poster at the Fall AGU Meeting.

[61] Conyers. G. and Granger, D. E. (2010) Do fungi transport ^{10}Be during wood degradation?, contributed poster at the Fall AGU Meeting

[60] Erlanger, E. D., Granger, D. E., and Gibbon, R. J. (2010) Slow river incision and erosion strongly limit active uplift in Southern Africa contributed poster at the Fall AGU Meeting.

[59] Erlanger, E. D., Granger, D. E., and Gibbon, R. J., (2009) Uplift rates of southern Africa from incision rates of the Sundays River, South Africa. contributed poster at the Fall AGU Meeting.

[58] Darling, A.L., Karlstrom, K.E., Kirby, E., Ouimet, W. B., Aslan, A., and Granger, D.E., (2009) Incision history of the Colorado River system over the last several Ma from cosmogenic burial dating of high terrace gravels, contributed poster at the Fall AGU Meeting.

[57] Cyr, A. J., Granger, D.E., Olivetti, V., and Molin, P., (2009) Distinguishing between tectonic and lithologic controls on bedrock channel longitudinal profiles using cosmogenic ^{10}Be erosion rates and channel steepness index, contributed poster at the Fall AGU Meeting.

[56] De Waele, J., and Granger, D. (2008) Cave sediments in Taquisara valley (Central-East Sardinia) and their significance for landscape evolution, submitted talk at 84th Congresso Nazionale di Geologia, Sassari, 15-18 September, *Rendiconti online Societá Geologica. Italiana.*, v. 3., 316-317.

[55] Granger, D. E., Cyr, A. J., Bartelletti, A., and Amorfini, A. (2008) Chlorine-36 exposure dating of Roman and Medieval marble quarries near Carrara, Italy, submitted poster at AMS-11 meeting, Rome, Italy, 14-19 September.

[54] Caffee, M. W., Granger, D. E., Jackson, G. S., Bourgeois, M., Clifton, T., Dague, T., Einstein, J., Gilbert, Z., Kubley, T., Ma, S., Miller, T., Mueller, K., Plunkett, S. (2008) Accelerator mass spectrometry at PRIME Lab: progress report, submitted poster at AMS-11 meeting, Rome, Italy, 14-19 September.

[53] Granger, D. E. (2008) A subtraction method for burial dating with ^{26}Al and ^{10}Be, submitted talk at AMS-11 meeting, Rome, Italy, 14-19 September.

[52] Aslan, A., Hood, W., Karlstrom, K., Kirby, E., Granger, D., Betton, C., Darling, A., Benage, M., and Schoepfer, S. D. (2008) Abandonment of Unaweep Canyon ~1Ma and the effects of transient knickpoint migration, western Colorado, submitted talk at *GSA Annual Meeting*, Houston.

[51] Cyr, A. J., Olivetti, V., Granger, D. E., Molin, P., and Faccenna, C. (2008) Comparing the spatial variability of cosmogenic ^{10}Be erosion rates and channel steepness to Quaternary uplift rates in Northern and Southern Italy, submitted talk at *GSA Annual Meeting,*, Houston.

[50] Granger, D. E., Shen, G., Gao, B., and Gao, X., (2008) Radiometric dating at Zhoukoudian (Locality 1) based on cosmogenic nuclide dating of stone tools (submitted talk), *Paleoanthropology Society Annual Meeting*, Vancouver, British Columbia, Canada.

[49] Leader, G. M., Gibbon, R., Kuman, K., Granger, D., and Partridge, T., (2008) New evidence suggesting organized flaking in Early Acheulian core reduction strategies, Rietputs 15, Northern Cape, South Africa (submitted poster), *Paleoanthropology Society Annual Meeting*, Vancouver, British Columbia, Canada.

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[3] Granger, D.E. and J.W. Kirchner (1995) Downcutting rate of the New River, Virginia, from 26Al/10Be in buried river gravels *EOS, Transactions, American Geophysical Union*, v. 76, no. 46, p. F689.

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GRANTS

2021-2024, Cosmogenic 10Be-26Al-21Ne burial dating of Pliocene sedimentation in the Western Yunnan Plateau, co-PI with Zhijun Zhao (Nanjing Normal University). $0 to Purdue.

2020-2023, *Collaborative Research: Reconstructing temperatures during the mid-Pliocene Warm Period in the McMurdo Dry Valleys with cosmogenic noble gases*, $56,383 to Purdue, awarded to Marissa Tremblay & Darryl Granger (Purdue), Greg Balco (Berkeley Geochronology Center), Jennifer Lamp (LDEO)

2020-2022, *Collaborative Research: Quantifying controls on weathering of volcanic rocks*, $240,186 to Purdue, awarded to Darryl Granger (Purdue) and Stephen Hughes (Univ Puerto Rico, Mayaguez)

2019-2022, *Collaborative Research: Quantifying temporal relationships between tectonic forcing and landscape responses in the central Andean Precordillera, Argentina*, $224,098 to Purdue, awarded to David Shuster (U.C. Berkeley) and D. Granger (Purdue).

2017-2021, *Dating the Cenozoic incision history of the Tennessee and Shenandoah Rivers with cosmogenic nuclides and ^{40}Ar/^{39}Ar in manganese oxides*, $485,080. Awarded to D. Granger.

2016-2021, *Facility Support: The Purdue rare isotope measurement laboratory*, National Science Foundation, awarded to M. Caffee, D. Granger, N. Lifton, and P. Muzikar, $3,540,000

2012-2014, *Collaborative Research: Beryllium-10 in detrital magnetite as a new tool in erosion and weathering studies*, National Science Foundation, $309,388 to Purdue Awarded to D. Granger (lead PI) and Cliff Riebe (U. Wyoming).

2012-2016, *Facility Support: The Purdue rare isotope measurement laboratory,* National Science Foundation, awarded to M. Caffee, D. Granger, N. Lifton, and P. Muzikar, $3,173,891

2010-2013, *Collaborative Research: Climatic and biotic controls on Late Quaternary Erosion in the Oregon Coast Range*, National Science Foundation, $71,216 to Purdue. Awarded to Josh Roering (U. Oregon), Dan Gavin (U. Oregon), and Darryl Granger.

2009-2011, *An isochron method for burial dating with cosmogenic nuclides: Application to river incision in southern Africa,* National Science Foundation, awarded to D. Granger, $301,935

2009-2012, *Facility Support: The Purdue rare isotope measurement laboratory*, National Science Foundation, awarded to M. Caffee, D. Granger, and P. Muzikar, $1,978,583.

2005-2008, *Facility Support: The Purdue rare isotope measurement laboratory,* National Science Foundation, awarded to M. Caffee, D. Elmore, P. Muzikar, and D. Granger, $1,358,784.

2003-2007, *Collaborative research: retreating-trench, extension and accretion tectonics (Retreat): A multidisciplinary study of the Northern Apennines,* National Science Foundation, $298,000 to Purdue.

2003-2004, *Facility Support: The Purdue rare isotope measurement Laboratory,* National Science Foundation, awarded to M. Caffee, D. Elmore, D. Granger, and P. Muzikar $1,566,500.

2001-2006, *CAREER: Using caves in tectonic and climatic geomorphology*, National Science Foundation, $250,000.

2000-2002, *Collaborative research:Relief evolution at the fluvial-glacial transition*, National Science Foundation, $31,449, awarded to K. Whipple (MIT) and D. Granger.

1998, *Upgrading (and expanding) the geophysics computer network at Purdue*, National Science Foundation, awarded to S. King, L. Braile, R. Sack, J. Harbor, A. Johnson, D. Granger, $75,000.

1998-2001, *Facility Support: Purdue Rare Isotope Measurement Laboratory*, National Science Foundation, awarded to D. Elmore, M. Lipschutz, D. Granger, F. Rickey, P. Simms, P. Sharma, S. Vogt., $1,590,830.

1997-2000, *Plio-Pleistocene history of river incision and catchment erosion from cosmogenic ^{26}Al and ^{10}Be in cave sediment,* National Science Foundation, $170,000.

SERVICE

Interim Head, Department of Earth Atmospheric and Planetary Sciences, 2018
Associate Head, Department of Earth Atmospheric and Planetary Sciences, 2013-2017; 2019-2021

<u>*Editorial*</u>
Editorial Board, *Science Advances*, 2022-
Associate Editor, *Journal of Human Evolution*, 2009-2011
Associate Editor*, Journal of Geophysical Research: Earth Surface* 2003-2006
Editorial board, *Geology*, 2001-2003

<u>*Review panels*</u>
NSF Panel Member, Geology & Paleontology, Spring 2002-Fall 2003
NSF Panel Member, Geomorphology and Land Use Dynamics, Fall 2004-Spring 2005
Indiana Core Teaching Library Panel

<u>*University Service committees*</u>
Executive committee, PRIME Lab
Undergraduate Curriculum and Academic Policy Committee (UCAP)
University Senate, Purdue University, 2012-2015
Student Affairs Committee, Purdue University, 2013-2015

Short Courses
Lecturer, European Union short course on cosmogenic nuclides, Harkany, Hungary, 12-16 June 2006.
Instructor, Karst Geomorphology, Mammoth Cave National Park, Kentucky, 2000, 2002, 2008.

Documentary Films

World's Biggest Cave (2011) *National Geographic Channel*.
Mystery Caves of Guangxi (2013) *National Geographic Channel International* and *CCTV* (China).

Public outreach
Granger's research featured in *Discover* magazine's top 100 science stories of the year: 2009, 2015, and 2016.
Featured in *Boiler Bytes* programs, 2009 and 2015.
Interviewed for features in New York Times, Washington Post, BBC, NPR, and many other news outlets globally for research in 2009, 2015, and 2016.

STUDENTS

Current Graduate Students
Angus Moore, Ph.D. student

Current Postdoctoral Researchers supervised
Brendon Quirk

Previous Graduate Students
Adrian Singleton, M.S. student (co-advised with N. Lifton), now with City of New York
William Odom, Ph.D., now at USGS
Grace Conyers, M.S., now at Insanitek (science writing)
Erica Erlanger, M. S., now a Ph.D. student, ETH, Switzerland
Andrew Cyr, Ph.D., now at USGS Menlo Park
Patrick Applegate, M. S., completed Ph.D. at Penn State, now a post-doc in the Netherlands
Darlene Anthony, Ph. D., now at Roane State Community College, Tennessee
Amy Wolkowinsky, M.S., now at Four Corners Environmental, Flagstaff, Arizona
Kyle Willis, M.S., now at Chevron/Texaco, Midland, Texas

Previous Post-Doctoral Researchers Supervised
Alyssa Abbey (co-advised with David Shuster at UC Berkeley), now at Cal State Long Beach
Ryan Gibbon, now at University of Capetown, South Africa
Christa Placzek, now at James Cook University, Australia
Philipp Haeuselmann, now at Karst Institute, Switzerland
Derek Fabel, now at SUERC AMS facility, Scotland