

# 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

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  
Paleoanthropology Society  
Geochemical Society

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

- [89] Hu, K., Fang, X., Ferrier, K., Granger, D.E., Zhao, Z., Ruetenik, G. A. (2021) Covariation of cross-divide differences in denudation rate and Chi: Implications for drainage basin reorganization in the Qilian Shan, northeast Tibet, *Earth and Planetary Science Letters*, *accepted*.
- [88] Odom, W., Hofmann, F., Van Arsdale, R., & Granger, D. (2020). New  $^{26}\text{Al}/^{10}\text{Be}$  and (U-Th)/He constraints on the age of the Upland Complex, central Mississippi River Valley. *Geomorphology*, 371, 107448.
- [87] Shen, G., Wang, Y., Tu, H., Tong, H. Wu, Z., Kuman, K., Fink, D., and Granger, D. (2020) Isochron  $^{26}\text{Al}/^{10}\text{Be}$  burial dating of Xihoudu: Evidence for the earliest human settlement in northern China. *L'Anthropologie*, 124, no. 5 (2020): 102790.
- [86] 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  $^{26}\text{Al}/^{10}\text{Be}$  burial dating for the Early Pleistocene Yuanmou hominin site, southern China. *Quaternary Geochronology*, 101022.
- [85] Moore, A. K., & Granger, D. E. (2019) Watershed-averaged denudation rates from cosmogenic  $^{36}\text{Cl}$  in detrital magnetite. *Earth and Planetary Science Letters*, 527, 115761.

- [84] 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.
- [83] 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).
- [82] 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)  $^{26}\text{Al}/^{10}\text{Be}$  burial dating of the Middle Pleistocene Yiyuan hominin fossil site, Shandong Province, northern China, *Scientific Reports*, 9, 6961.
- [81] 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.
- [80] Moore, A.K., and Granger, D.E. (2019) Calibration of the production rate of cosmogenic  $^{36}\text{Cl}$  from Fe, *Quaternary Geochronology*, v. 51, p. 87-98.
- [79] 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.
- [78] Wang, Y., Schoenbohm, L., Zhang, B., Granger, D. E., Zhou, R., Zhang, J., and Hou, J. (2017) Late Cenozoic landscape evolution along the Ailao Shan Shear Zone, SE Tibetan Plateau: Evidence from fluvial longitudinal profiles and cosmogenic erosion rates, *Earth and Planetary Science Letters*, v. 472, p. 323-333.
- [77] 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.
- [76] Tu, H., Shen, G., Granger, D., Yang, X., and Lai, Z. (2017) Isochron  $^{26}\text{Al}/^{10}\text{Be}$  burial dating of the Lantian hominin site at Gongwangling in northwestern China, *Quaternary Geochronology*.
- [75] Marshall, J.A., Roering, J. J., Gavin, D. G., Granger, D. E. (2017) Late Quaternary climatic controls on erosion rates and geomorphic processes in western Oregon, USA, *Geological Society of America Bulletin*, B31509, doi: 10.1130/B31509.1
- [74] Leader, G. M., Kuman, K., Gibbon, R. J., Granger, D. E. (2016) Early Acheulean organized core knapping strategies ca. 1.3 Ma at Rietputs 15, Northern Cape Province, South Africa, *Quaternary International*, doi:10.1016/j.quaint.2016.08.046.
- [73] Laureano, F.V., Karmann, I., Granger, D.E., Auler, A.S., Almeida, R.P., Cruz, F.W., Stricks, N.M. and Novello, V.F., (2016) Two million years of river and cave aggradation in NE Brazil: Implications for speleogenesis and landscape evolution. *Geomorphology*, 273, pp.63-77.
- [72] Wu, Q., Zhao, Z., Liu, L., Granger, D. E., Wang, H., Cohen, D. J., Wu, Xiaohong, Ye, Maolin, Bar-Yosef, O., Lu, B., Zhang, J., Zhang, P., Yuan, D., Qi, W., Cai, L., and Bai, S. (2016) Outburst flood at 1920 BCE supports historicity of China's Great Flood and the Xia dynasty, *Science*, v. 353, p. 579-582.
- [71] Zhao, Z., Granger, D., Zhang, M., Kong, X., Yang, S., Chen, Y. and Hu, E. (2016) A test of the isochron burial dating method on fluvial gravels within the Pulu volcanic sequence, West Kunlun Mountains, China. *Quaternary Geochronology*, v 34, p.75-80.
- [70] Limbert, H., Limbert, D., Hieu, N., Phái, V.V., Bac, D.K., Phuong, T.H. and Granger, D. (2016) The discovery and exploration of Hang Son Doong. *Boletín geológico y minero*, v. 127(1), p.165-176.
- [69] Frisbee, M. D., Tysor, E. H., Stewart-Maddox, N.S., Tsinnajinnie, L.M., Wilson, J.L., Granger, D.E., and Newman, B.D. (2016) Is there a geomorphic expression of interbasin groundwater flow in watersheds? Interactions between interbasin groundwater flow, springs, streams, and geomorphology, *Geophys. Res. Lett.*, 43, doi:10.1002/2015GL067082.
- [68] Lotter, M.G., Gibbon, R.J., Kuman, K., Leader, G.M., Forssman, T., and Granger, D.E. (2016) A geoarchaeological study of the Middle and Upper Pleistocene levels at Canteen Kopje, Northern Cape province, South Africa. *Geoarchaeology* 1-20. doi :10.1002/gea.21541.
- [67] Marshall, J.A., Roering, J.J., Bartlein, P.J., Gavin, D. G., Granger, D. E., Rempel, A.W., Praskievicz, S. J., and Hales, T.C. (2015) Frost for the trees : Did climate increase erosion in unglaciated landscapes during the late Pleistocene? *Science Advances* 1(10),e1500715.
- [66] Tu, H., Shen, G., Li, H., Xie, F., and Granger, D.E. (2015) Burial dating of the Xujiayao-Houjiayou

- site in Nihewan Basin, Northern China, *PLoS one*, 10(2) :e0118315.
- [65] Liu, X., Shen, G., Tu, H., Lu, C., and Granger, D.E. (2015) Initial  $^{26}\text{Al}/^{10}\text{Be}$  dating of the hominin site Bailong Cave in Hubei Province, central China. *Quaternary International*, 389, 235-240.
- [64] Álvarez, C., Parés, J.M., Granger, D., Duval, M., Sala, R., Toro I, (2015) New magnetostratigraphic and numerical age of the Fuente Nueva-3 site (Guadix-Baza Basin, Spain), *Quaternary International*, doi:10.1016/j.quaint.2015.04.044
- [63] Laureano, F. V., Granger, D. E., Karmann, I., Novello, V. F., (2015) Datação de soterramento utilizando os isótopos cosmogênicos  $^{10}\text{Be}$  e  $^{26}\text{Al}$ : síntese metodológica e breve revisão de suas aplicações em Geociências, *GEONOMOS* (In Portuguese).
- [62] Wang, F., Michalski, G., Seo, J.-H., Granger, D. E., Lifton, N., and Caffee, M. (2015) Beryllium-10 concentrations in the hyper-arid soils in the Atacama Desert, Chile: Implications for arid soil formation rates and El Niño driven changes in Pliocene precipitation, *Geochimica et Cosmochimica Acta*, doi:10.1016/j.gca.2015.03.008.
- [61] Granger, D. E., Gibbon, R. J., Kuman, K., Clarke, R.J., Bruxelles, L., and Caffee, M.W. (2015) New cosmogenic burial ages for Sterkfontein Member 2 *Australopithecus* and Member 5 Oldowan, *Nature* doi:10.1038/nature14268.
- [60] Placzek, C., Granger, D. E., Matmon, A., Quade, J., and Ryb, U. (2014) Geomorphic process rates in the central Atacama desert, Chile: Insights from cosmogenic nuclides and implications for the onset of hyperaridity, *American Journal of Science*, v. 314, p 1462-1512.
- [59] Granger D. E., and Schaller M., (2014) Cosmogenic nuclides and erosion at the watershed scale, *Elements*, v. 10, p. 369-373.
- [58] Liu, X., Shen, G., Tu H., Lu, C., and Granger, D. E., (2014) Initial  $^{26}\text{Al}/^{10}\text{Be}$  burial dating of the hominin site Bailong Cave in Hubei, Province, central China, *Quaternary International* v. xxx, p. 1-6 (doi:10.1016/j.quaint.2014.10.028).
- [57] Gibbon, R. J., Pickering, T. R., Sutton, M. B., Heaton, J. L., Kuman, K., Clarke, R. J., Brain, C. K., Granger, D. E. (2014) Cosmogenic nuclide burial dating of hominin-bearing Pleistocene cave deposits at Swartkrans, South Africa, *Quaternary Geochronology*, v. 24, p. 10-15.
- [56] Aslan, A., Hood, W. C., Karlstrom, K. E., Kirby E., Granger, D. E., Kelley, S., Crow, R., Donahue, M.S., Polyak, V., and Asmerom, Y. (2014) Abandonment of Unaweep Canyon (1.4-0.8 Ma) western Colorado: Effects of stream capture and anomalously rapid Pleistocene river incision, *Geosphere*, v. 10, p. 428-446.
- [55] Crow, R., Karlstrom, K., Darling, A., Crossey, L., Polyak, V., Granger D., Asmerom, Y., and Schmandt, B., (2014) Steady incision of Grand Canyon at the million-year timeframe: a case for mantle-driven differential uplift, *Earth and Planetary Science Letters*, v. 397, p. 159-173.
- [54] Cyr, A. J., Granger, D. E., Olivetti, V., and Molin, P. (2014) Distinguishing between tectonic and lithologic controls on bedrock channel longitudinal profiles using cosmogenic  $^{10}\text{Be}$  erosion rates and channel steepness index, *Geomorphology*. v. 209, p. 27-38.
- [53] Donahue, M.S., Karlstrom, K.E., Aslan, A., Darling, A., Granger, D., Wan, E., Dickinson, R. G., and Kirby E. (2013) Incision history of the Black Canyon of Gunnison, Colorado, over the past ~1Ma inferred from dating of fluvial gravel deposits, *Geosphere*, v. 9, p. 815-826.
- [52] Granger, D. E., Lifton, N. A., and Willenbring, J. K. (2013), A cosmic trip: 25 years of cosmogenic nuclides in geology, *Geological Society of America Bulletin*, v. 125, p. 1379-1402.
- [51] De Waele, J., Ferrarese, F., Granger, D., and Sauro, F. (2012) Landscape evolution in the Tacchi area (Central-East Sardinia) based on karst and fluvial morphology and age of cave sediments, *Geografia Fisica e Dinamica Quaternaria*, v. 35, p. 119-127.
- [50] Erlanger, E.D., Granger, D.E., and Gibbon, R.J. (2012), Rock uplift rates in South Africa from isochron burial dating of fluvial and marine terraces, *Geology*, v. 40, p. 1019-1022.

- [49] Riebe, C. S. and Granger, D.E. (2013), Quantifying the effects of deep and near-surface chemical erosion on cosmogenic nuclides in soils, saprolites, and sediments, *Earth Surface Processes and Landforms*, DOI: 10.1002/esp.3339.
- [48] Darling, A. L., Karlstrom, K.E., Granger, D. E., Aslan, A., Kirby, E., Ouimet, W. B., Lazear, G. D., Coblenz, D. D., and Cole, R. D. (2012), New incision rates along the Colorado River system based on cosmogenic burial dating of terraces: Implications for regional controls on Quaternary incision, *Geosphere*, v. 8, p. 1020-1041.
- [47] Olivetti, V., Cyr, A. J., Molin, P., Faccenna, C. and Granger, D. E. (2012), Uplift history of the Sila Massif, southern Italy, deciphered from cosmogenic  $^{10}\text{Be}$  erosion rates and river longitudinal profile analysis, *Tectonics*, v. 31, TC3007, 19 pp.
- [46] Shen, G., Michel, V., Despriée, J., Han, F., Granger, D.E. (2012), Datation d'enfouissement par  $^{26}\text{Al}/^{10}\text{Be}$  et son application préliminaire à des sites du Paléolithique Inférieur en Chine et en France, *L'Anthropologie*, v. 111, p. 157-165.
- [45] Matmon, A., Stock, G. M., Granger, D. E., and Howard, K. A. (2012) Dating of Pliocene Colorado River sediments: Implications for cosmogenic burial dating and the evolution of the lower Colorado River, *Geological Society of America Bulletin*, B30453.1, v. 124, p. 626-640.
- [44] Granger, Darryl E., Cyr, Andrew J., Bartelletti, Antonio, and Amorfini, Alessia (2011) I nuclidi cosmogenici applicati alla scala dei tempi storici: la datazione delle cave antiche di marmo presso Carrara con l'esposizione al Cloro-36, *Acta Apuana*, VII-VIII 2008-2009, p. 57-70.
- [43] Hu, X., Kirby, E., Pan, B., Granger, D.E., and Su, H. (2011) Cosmogenic burial ages reveal sediment reservoir dynamics along the Yellow River, China, *Geology*, v. 39, p. 839-842.
- [42] Federici, P.R., Granger, D. E., Pappalardo, M., Ribolini, A., Spagnolo, M., Cyr, A.J. (2011) Last Glacial Maximum and the Gschnitz stadial in the Maritime Alps according to  $^{10}\text{Be}$  cosmogenic dating, *Boreas*, published online 3 Nov 2011.
- [41] Placzek, C.J., Matmon, A., Granger, D.E., Quade, J., and Niedermann, S. (2010) Evidence for active landscape evolution in the hyperarid Atacama from multiple terrestrial cosmogenic nuclides, *Earth and Planetary Science Letters*, v. 295, p. 12-20.
- [40] Cyr, A.J., Granger, D. E., Olivetti, V., and Molin, P., (2010) Quantifying rock uplift rates using channel steepness and cosmogenic nuclide-determined erosion rates: Examples from northern and southern Italy, *Lithosphere*, v. 2, p. 188-198.
- [39] Ouimet, W. B., Whipple, K. X., and Granger, D. E. (2009) Beyond threshold hillslopes: Channel adjustment to base-level fall in tectonically active mountain ranges, *Geology*, v. 37, p. 579-582.
- [38] Shen, G. J., Gao, X., Gao, B., and Granger, D. E. (2009), Age of Zhoukoudian *Homo erectus* determined with  $^{26}\text{Al}/^{10}\text{Be}$  burial dating, *Nature*, v. 458, p. 198-200.
- [37] Shen, G. J., Shao, Q. F., and Granger, D.E. (2009)  $^{26}\text{Al}/^{10}\text{Be}$  burial dating and its potential in dating early hominid sites in China, *Acta Anthropologica Sinica*, v. 28, no. 3, p. 292-299. (*In Chinese*)
- [36] Kong, P., Granger, D. E., Wu, F.-Y., Caffee, M. W., Wang, Y.-J., Zhao, X.-T., and Zheng, Y. (2009), Cosmogenic nuclide burial ages and provenance of the Xigeda paleo-lake: implications for evolution of the Middle Yangtze River, *Earth and Planetary Science Letters*, v. 278, p. 131-141.
- [35] Gibbon, R.J., Granger, D.E., Kuman, K., and Partridge, T.C. (2009), Early Acheulean technology in the Vaal River Gravels, South Africa, dated with cosmogenic nuclides, *Journal of Human Evolution*, v. 56, p. 152-160.
- [34] Federici, P. R., Granger, D. E., Pappalardo, M., Ribolini, A., Spagnolo, M., and Cyr, A. J., (2008) Exposure dating of an Egesen moraine in the Maritime Alps, Italy, with cosmogenic  $^{10}\text{Be}$ , *Boreas*, v. 37, p. 245-253.
- [33] Carbonell, E., Burmúdez de Castro, J. M., Parés, J. M., Pérez-González, A., Cuenca-Bescós, G., Ollé, A., Mosquera, M., Huguet, R., van der Made, J., Rosas, A., Sala, R., Vallverdú, J., García, N., Granger, D. E., Martínón-Torres, M., Rodríguez, X. P., Stock, G. M., Vergès, J. M., Allué, E., Burjachs, F., Cáceres, I., Canals, A., Benito, A., Díez, C., Lozano, M., Mateos, A., Navazo, M.,

- Rodríguez, J., Rosell, J., and Arsuage, J. L., (2008) The first hominin species of Europe, *Nature*, v. 452, p. 465-470.
- [32] Cyr, A. J., and Granger, D. E., (2008) Dynamic equilibrium among erosion, river incision and coastal uplift in the northern Apennines, Italy, *Geology*, v. 36, p. 103-106.
- [31] Granger, D. E., and Riebe, C. S., (2007) Cosmogenic nuclides in weathering and erosion, in Drever, J. I., ed., *Surface and Ground Water, Weathering and Soils*, Volume 5 in Turekian, K. K., and Holland, H.D., eds., *Treatise on Geochemistry (online update)*, Elsevier-Pergamon, Oxford, doi:10.1016/B978-008043751-4/00238-8, 43 p.
- [30] Anthony, D. M., and Granger, D. E., (2007) An empirical stream power formulation for knickpoint retreat in Appalachian fluviokarst, *Journal of Hydrology*, doi: 10.1016/j.hydro.2007.06.013.
- [29] Haeuselmann, P., Granger, D. E., Jeannin, P.-Y., and Lauritzen, S.-E., (2007) Abrupt glacial valley incision at 0.8 Ma dated from cave deposits in Switzerland, *Geology*, v. 35, p. 143-146.
- [28] Anthony, D. M., and Granger, D. E., (2007) A new chronology of Appalachian erosional surfaces determined by cosmogenic nuclides in cave sediments, *Earth Surface Processes and Landforms*, v. 32, p. 874-887.
- [27] Ma, X, Li, Y., Bourgeois, M., Caffee, M., Elmore, D., Granger, D., Muzikar, P., Smith, P., (2007), WebCN: A web-based computation tool for in situ-produced cosmogenic nuclides, *Nuclear Instruments and Methods in Physics Research, B*, v. 259, p. 636-652.
- [26] Granger, D. E., (2006) A review of burial dating methods using  $^{26}\text{Al}$  and  $^{10}\text{Be}$ , in Siame, L., Bourlès, D. L., and Brown, E. T., eds., In situ-produced cosmogenic nuclides and quantification of geological processes, *Geological Society of America Special Paper 415*, p. 1-16.
- [25] Anthony, D. M. and Granger, D. E., (2006) Five million years of Appalachian landscape evolution preserved in cave sediments, in Harmon, R. S., and Wicks, C., eds., Perspectives on karst geomorphology, hydrology and geochemistry—A tribute volume to Derek C. Ford and William B. White, *Geological Society of America Special Paper 404*, p. 39-50.
- [24] Muzikar, P., and Granger, D. E., (2006) Combining cosmogenic, stratigraphic, and paleomagnetic information in a Bayesian perspective: general results and an application to Sterkfontein, *Earth and Planetary Science Letters*, v. 243, p. 400-408.
- [23] Stock, G. M., Granger, D. E., Anderson, R. S., Sasowsky, I. D., Finkel, R. C. (2005) Comparison of U-Th, paleomagnetism, and cosmogenic burial methods for dating caves: Implications for landscape evolution studies, *Earth and Planetary Science Letters*, v. 236, p. 388-403.
- [22] Haeuselmann, P. and Granger, D. E., (2005) Dating of caves by cosmogenic nuclides: method, possibilities, and the Siebenhengste example, *Acta Carsologica*, v. 34, p. 43-50.
- [21] Granger, D. E., and Stock, G. M., (2004) Using cave deposits as geologic tiltmeters: Application to postglacial rebound of the Sierra Nevada, California, *Geophysical Research Letters*, v. 31, no. 22, p. L22051.
- [20] Haeuselmann, P., and Granger, D. E., (2004) Datation des cavités à l'aide de nucléides cosmogéniques, *Le grotte d'Italia*, v. 5, p. 123-126.
- [19] Wolkowinsky, A. J., and Granger, D. E., (2004) Early Pleistocene incision of the San Juan River, Utah, dated with  $^{26}\text{Al}$  and  $^{10}\text{Be}$ , *Geology*, v. 32, p. 749-752.
- [18] Anthony, D. M., and Granger, D. E., (2004) A Late Tertiary origin for multilevel caves along the western escarpment of the Cumberland Plateau, Tennessee and Kentucky, established by cosmogenic  $^{26}\text{Al}$  and  $^{10}\text{Be}$ , *Journal of Cave and Karst Studies*, v. 66, no. 2, p. 46-55.
- [17] Muzikar, P., Elmore, D., and Granger, D. E., (2003) Accelerator mass spectrometry in geologic research, *Geological Society of America Bulletin*, v. 115, p. 643-654.
- [16] Partridge, T. C., Granger, D. E., Caffee, M. C., and Clarke, R., (2003) Lower Pliocene hominid remains from Sterkfontein, *Science*, v. 300, p. 607-612.

- [15] Javorsek, D. II, Elmore, D., Fischbach, E., Granger, D., Miller, T., Oliver, D., and Teplitz, V., (2002) Search for anomalously heavy nuclei in gold and iron, *Physical Review D*, v. 65, p. 072003 (1-9).
- [14] Javorsek, D. II, Elmore, D., Fischbach, E., Granger, D., Miller, T., Oliver, D., and Teplitz, V., (2001) New experimental limits on strongly interacting massive particles at the TeV scale, *Physical Review Letters*, v. 87, no. 23, p. 231804 (1-4).
- [13] Kadlec, J. Hercman, H., Voitech, B., Sroubek, P., Diehl, J., and Granger, D., (2001), Cenozoic history of the Moravian karst (northern segment): Cave sediments and karst morphology, *Acta Mus. Moraviae*, v. LXXXVI, 111-160.
- [12] Riebe, C.S., Kirchner, J.W., and Granger, D.E., (2001) Quantifying quartz enrichment and its consequences for cosmogenic measurements of erosion rates from alluvial sediment and regolith, *Geomorphology*, v. 40, no. 1-2, p. 15-19.
- [11] Granger, D. E., Fabel, D., and Palmer, A. N., (2001) Pliocene-Pleistocene incision of the Green River, Kentucky, determined from radioactive decay of cosmogenic  $^{26}\text{Al}$  and  $^{10}\text{Be}$  in Mammoth Cave sediments, *Geological Society of America Bulletin*, v. 113, no. 7, p. 825-836.
- [10] Kirchner, J. W., Finkel, R. C., Riebe, C. S., Granger, D. E., Clayton, J. L., Megahan, W. F., (2001) Episodic mountain erosion inferred from sediment yields over 10-year and 10,000-year timescales, *Geology*, v. 29, no 7, p. 591-594.
- [9] Riebe, C. S., Kirchner, J. W., Granger, D. E., and Finkel, R. C., (2001) Strong tectonic and weak climatic control of long-term chemical weathering rates, *Geology*, v. 29, no. 6, p. 511-514.
- [8] Riebe, C. S., Kirchner, J. W., Granger, D. E., and Finkel, R. C., (2001) Minimal climatic control on erosion rates in the Sierra Nevada, California, *Geology*, v. 29, no. 5, p. 447-450.
- [7] Granger, D. E., and Muzikar, P., (2001) Dating sediment burial with cosmogenic nuclides: Theory, techniques, and limitations, *Earth and Planetary Science Letters*, v. 188, no. 1-2, p. 269-281.
- [6] Granger, D. E., Riebe, C. S., Kirchner, J. W., and Finkel, R. C., (2001) Modulation of erosion on steep granitic slopes by boulder armoring, as revealed by cosmogenic  $^{26}\text{Al}$  and  $^{10}\text{Be}$ , *Earth and Planetary Science Letters*, v. 186, no. 2, p. 269-281.
- [5] Riebe, C. S., Kirchner, J. W., Granger, D. E., and Finkel, R. C., (2000) Erosional equilibrium and disequilibrium in the Sierra Nevada mountains, inferred from cosmogenic  $^{26}\text{Al}$  and  $^{10}\text{Be}$  in alluvial sediment, *Geology*, v. 28, p. 803-806.
- [4] Granger, D. E., and Smith, A. L., (2000) Dating buried sediments using radioactive decay and muogenic production of  $^{26}\text{Al}$  and  $^{10}\text{Be}$ , *Nuclear Instruments and Methods in Physics Research, B: Beam Interactions with Materials*, v. 172, p. 822-826.
- [3] Sharma, P., Bourgeois, M., Elmore, D., Ma, Xiuzeng, Miller, T., Mueller, K., Rickey, F., Simms, P., Lipschutz, M., Granger, D., and Vogt, S., (2000) PRIME Lab performance, upgrades, and research applications, *Nuclear Instrumentation and Methods in Physics Research, B: Beam Interactions with Materials*, v. 172, p. 112-123.
- [2] Granger, D. E., Kirchner, J. W., and Finkel, R. C., (1997) Quaternary downcutting rate of the New River, Virginia, from differential decay of  $^{26}\text{Al}$  and  $^{10}\text{Be}$  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 (3<sup>rd</sup> 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 (2<sup>nd</sup> 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 (2<sup>nd</sup> 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 <sup>26</sup>Al/<sup>10</sup>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., Čížková, 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 <sup>26</sup>Al and <sup>10</sup>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 disequilibrium, 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  $^{26}\text{Al}$  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  $^{26}\text{Al}$  and  $^{10}\text{Be}$ : 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  $^{10}\text{Be}$  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  $^{26}\text{Al}$  and  $^{10}\text{Be}$  to date 4 million years of glacial valley lowering in Switzerland (invited talk), *32<sup>nd</sup> 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  $^{26}\text{Al}$  and  $^{10}\text{Be}$  (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 <sup>26</sup>Al and <sup>10</sup>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

- [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

- [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] Gehring, 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  $^{26}\text{Al}/^{10}\text{Be}$  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  $^{26}\text{Al}$  AND  $^{10}\text{Be}$ , 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  $^{26}\text{Al}/^{10}\text{Be}$  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  $^{36}\text{Cl}$  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  $^{26}\text{Al}$  and  $^{10}\text{Be}$ , Geological Society of America Annual Meeting, Seattle, 2017.
- [93] Odom III, W.E. and Granger, D.E., Photovoltaic silicon panels as artificial targets for  $^{26}\text{Al}$  production, 14<sup>th</sup> 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 evolution 14<sup>th</sup> International Conference on Accelerator Mass Spectrometry, Ottawa, Canada, 2017.
- [91] Moore, A.K. and Granger, D.E.,  $^{36}\text{Cl}$  production rate from Fe, 14<sup>th</sup> 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  $^{26}\text{Al}/^{10}\text{Be}$  production rate ratio from glacial moraine boulders at mid-latitudes, USA, 14<sup>th</sup> International Conference on Accelerator Mass Spectrometry, Ottawa, Canada, 2017
- [89] Moore, A. K., and Granger, D. E., Validating erosion rates from  $^{36}\text{Cl}$  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  $^{36}\text{CL}$  IN MAGNETITE: A NEW TOOL FOR EROSION RATES, GSA Fall Meeting, 2015.
- [85] Odom III, W. E., and Granger, D. E., CALIBRATING  $^{26}\text{AL}$  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  $^{10}\text{Be}$  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  $^{10}\text{Be}$  in magnetite, *AGU Fall Meeting, San Francisco*.
- [73] Rogers, H. E., Riebe, C. S., and Granger, D. E. (2013) Cosmogenic  $^{10}\text{Be}$  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  $^{10}\text{Be}$ , 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  $^{10}\text{Be}$  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., Coblenz, 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  $^{10}\text{Be}$  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  $^{10}\text{Be}$  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 84<sup>th</sup> Congresso Nazionale di Geologia, Sassari, 15-18 September, *Rendiconti online Società 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  $^{26}\text{Al}$  and  $^{10}\text{Be}$ , 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 Unawep 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  $^{10}\text{Be}$  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.
- [48] Gibbon, R., Granger, D., Partridge, T., Kuman, K., and Leader, G., (2008) Cosmogenic burial dating of the Acheulian tool-bearing Rietputs formation, Northern Cape Province, South Africa (submitted talk), *Paleoanthropology Society Annual Meeting*, Vancouver, British Columbia, Canada.
- [47] Placzek, C., Matmon, A., Granger, D., Quade, J., and Caffee, M.W. (2007) Erosion rates in the Atacama desert, northern Chile (~24°S) from multiple cosmogenic nuclides, *GSA annual meeting*, Denver.
- [46] Ouimet, W., Whipple, K., and Granger, D. (2006), Rates and patterns of short-term erosion on the eastern margin of the Tibetan Plateau, a transient landscape, *AGU Fall meeting*, San Francisco, California
- [45] Granger, D. E., Spagnolo, M., Federici, P., Pappalardo, M., Ribolini, A., Cyr, A. J. (2006) Last glacial maximum dated by means of  $^{10}\text{Be}$  in the Maritime Alps, Italy, *AGU Fall meeting*, San Francisco, California.
- [44] Sandoval, M., Karlstrom, K. E., Aslan, A., Kirby, E., and Granger, D. (2006) Incision history of the Black Canyon of the Gunnison, *AGU Fall meeting*, San Francisco, California
- [43] Cyr, A. J. and Granger, D. E. (2006), Long-term erosion and exhumation rates in the Romagna Apennines, north-central Italy, *Goldschmidt conference*, Melbourne, Australia.
- [42] Applegate, P. J., Granger, D. E., and Alley, R. B. (2006) Refining moraine age estimates from cosmogenic exposure dates using the maximum likelihood method, *GSA annual meeting*, Philadelphia, Pennsylvania.
- [41] Cyr, A. J., and Granger, D. E. (2006) Relating spatial patterns of erosion to tectonics in the Apennines, Italy, *GSA annual meeting*, Philadelphia, Pennsylvania.

- [40] Brandon, M. T., Bennett, R. A., Cowan, D. S., Granger, D. E., Levin, V., Okaya, D., Park, J. J., Pazzaglia, F. J., Reiners, P. W., and Willett, S. D. (2006) Syn-convergent extension associated with a retreating subduction zone, northern Apennines, Italy, *GSA annual meeting*, Philadelphia, Pennsylvania.
- [39] Granger, D. E., Cyr, A. J., and Rauh, E. (2005), Beryllium-10 measurement in carbonate rocks: progress, problems, and potential, *AMS-10 conference*, Berkeley, California.
- [38] Caffee, M. C., Elmore, D. E., Alexander, B., Bourgeois, M., Clifton, T., Dague, T., De Bonte, R., Einstein, J., Gilbert, Z., Granger, D., Kubley, T., Jackson, G. S., Ma, X., Mueller, K., and Muzikar, P. (2005) PRIME Lab AMS performance, upgrades, and plans, *AMS-10 conference*, Berkeley, California.
- [37] Clifton, T., Granger, D. E., Gilbert, Z., and Caffee, M. (2005) Quartz sample preparation for AMS, *AMS-10 conference*, Berkeley, California.
- [36] Caffee, M., Elmore, D., Jackson, G. S., Mueller, K., De Bonte, B., Kubley, T., Granger, D., and Alexander, B. (2005) Ion source modeling, design and performance at PRIME Lab, *AMS-10 conference*, Berkeley, California.
- [35] De Bonte, B., Caffee, M., Elmore, D., Jackson, G. S., Mueller, K., Muzikar, P., Kubley, T., Granger, D., and Alexander, B. (2005) A unique sample changer for the ion source at PRIME Lab, *AMS-10 conference*, Berkeley, California.
- [34] Kubley, T., Jackson, G. S., Caffee, M., Elmore, D., Mueller, K., De Bonte, B., Muzikar, P., Granger, D. E., and Alexander, B. (2005) Improved ion source performance at PRIME Lab, *AMS-10 conference*, Berkeley, California.
- [33] Ma, X., Li, Y., Smith, P., Caffee, M., Elmore, D., Granger, D., and Muzikar, P. (2005) Database and web-based solutions for in situ cosmogenic dating, *AMS-10 conference*, Berkeley, California.
- [32] Pazzaglia, F. J., Cascione, J. J., Eppes, M. C., Bierma, R. M., Granger, D., Bennett, R. A., Picotti, V., and Brandon, Mark T. (2005) Active folding, growth strata, and terraces at the northern Apennine mountain front, Bologna, Italy, *GSA annual meeting*, Salt Lake City, Utah.
- [31] Clifton, T., and Granger, D. E. (2005) Erosion rate of the Appalachian Plateau in the vicinity of the New River Gorge, West Virginia, *GSA North-Central meeting, Spring 2005, GSA Abstracts with Programs*, v. 37 n. 1.
- [30] Applegate, P., and Granger, D. E. (2004), Glacial isostasy and the modern Ohio River drainage, *GSA Fall meeting, 2004*
- [29] Granger, D. E., Wolkowinsky, A. J., and Caffee, M. (2003), Cosmogenic  $^{26}\text{Al}$  and  $^{10}\text{Be}$  profiles in high-level terrace gravels demonstrate Early Pleistocene entrenchment of the San Juan River in the Canyonlands region of Utah, *EOS, Transactions of the American Geophysical Union*, v. 84, p. F1538.
- [28] Anthony, D. M., and Granger, D. E., (2003) An empirical test of the stream power law in Appalachian Plateau fluviokarst, *EOS, Transactions of the American Geophysical Union*, v. 84, p. F760.
- [27] Anthony, D. M., and Granger, D. E., (2003) Five million years of Appalachian landscape evolution preserved in cave sediments, *Abstracts with Programs, Geological Society of America Annual Meeting*, v. 35, no. 6, p. 53.
- [26] Pazzaglia, F., Eppes, M., Granger, D., Reiners, P., Willett, S., and Brandon, M., (2003) Active tectonics, orogeny, and erosion in the northern Apennines, Italy: Initial results of the RETREAT project, *Abstracts with Programs, Geological Society of America Annual Meeting*, v. 35, no. 6, p. 296.
- [25] Brocklehurst, S. H., Granger, D. E., and Whipple, K. X. (2002) Implications of old, glaciated surfaces at high elevations in the Sierra Nevada, California, *EOS, Transactions of the American Geophysical Union*, 83 (47): F588.

- [24] Mills, H. H., and Granger, D. E. (2002) Cosmogenic isotope burial dating reveals 1.5 million-year-old fan deposit in Blue Ridge Mountains in North Carolina, *South-Central meeting of the Geological Society of America, Lexington, KY*.
- [23] Robinson, S. E., Arrowsmith, J. R., and Granger, D. E., (2000) Using  $^{10}\text{Be}$  and  $^{26}\text{Al}$  cosmogenic radionuclide depth profiles to identify and date alluvial fan deposition events, *Abstracts with Programs, Geological Society of America Annual Meeting*, v. 32, no. 7, p. A-182.
- [22] Schoonover, M., Weber, J., Elmore, D., and Granger, D., (2000) Evidence for episodic movement of jointed sandstone blocks in southern Illinois, *EOS, Transactions, American Geophysical Union*, v. 81, no. 48, p. F24.
- [21] Robinson, S. E., Arrowsmith, J. R., and Granger, D. E., (2000) Using AMS measurements to date and decipher arid piedmont depositional processes, *EOS, Transactions, American Geophysical Union*, v. 81, no. 48, p. F26.
- [20] Bullard, R. G., Lowell, T. V., Nash, D. B., and Granger, D. E., (2000) Estimation of slope erosion rates from  $^{10}\text{Be}$  isotope accumulation: A northern Kentucky experiment, *Abstracts with Programs, Geological Society of America Annual Meeting*, v. 32, no. 7, p. A-182.
- [19] Granger, D. E., and Fabel, D., (1999) Comparison of cosmogenic Al-26/Be-10 burial dating and paleomagnetic results from Mammoth Cave, Kentucky, *Abstracts with Programs, Geological Society of America Annual Meeting*, v. 31, no. 7, p. 90.
- [18] Granger, D. E. (1999) Dating buried sediments using radioactive decay and muogenic production of  $^{26}\text{Al}$  and  $^{10}\text{Be}$ , *8th International Conference on Accelerator Mass Spectrometry, Vienna, Austria, 6-10 September, 1999*.
- [17] Elmore, D., Cerling, T., de Silva, S., Gosse, J., Granger, D., Lal, D., Muzikar, P., Phillips, F., Sharma, P., Stone, J., and Zreda, M. (1999), Project LUCINDA: development of in situ-produced cosmogenic nuclides, *8th International Conference on Accelerator Mass Spectrometry (contributed talk), Vienna, Austria, 6-10 September, 1999*.
- [16] Sharma, P., Bourgeois, M., Elmore, D., Ma, Xiuzeng, Miller, T., Mueller, K., Rickey, F., Simms, P., Lipschutz, M., Granger, D., and Vogt, S. (1999) PRIME Lab performance, upgrades, and research applications, *8th International Conference on Accelerator Mass Spectrometry (contributed poster), Vienna, Austria, 6-10 September 1999*.
- [15] Riebe, C. S., Kirchner, J. W., Granger, D. E., and Finkel, R. C., (1999) Tectonic Control of Erosion Rates in the Sierra Nevada, California Inferred From Cosmogenic Nuclide Concentrations in Alluvial Sediment, *EOS, Transactions, American Geophysical Union*, v. 80, no. 46, p. 1037.
- [14] Kadlec, J., Hercman, H., Nowicki, T., Gazek, J., Vit, J., Sroubek, P., Diehl, J. F., Granger, D., (1999) Dating of the Holstejska cave deposits and their role for reconstruction of Moravian karst Cenozoic history, *The dating of Quaternary Marine and Land Sediments, Poznan, Czech Republic*.
- [13] Granger, D. E., and Smith, A. L., (1998) Glacial creation of Ohio River dated by radioactive decay of cosmogenic  $^{26}\text{Al}$  and  $^{10}\text{Be}$  in proglacial lake sediments, *Abstracts with Programs, Geological Society of America Annual Meeting*, v. 29, no. 6, p. A-298.
- [12] Granger, D. E. (1998) Burial dating with  $^{26}\text{Al}$  and  $^{10}\text{Be}$ , PRIME Lab Samplings (newsletter), March, p. 2-3.
- [11] Sasowsky, I. D., Granger, D. E., Coons, D., and Kambesis, P., (1998), Revised age for Xanadu Cave, Tennessee, and implications for river incision in the Cumberland Plateau escarpment, 1998 NSS Convention, programs and abstracts, p. 73.
- [10] Robinson, S. E., Arrowsmith, J. R., Granger, D. E., and Phillips, F. M. (1998), Using remote sensing and cosmogenic nuclides to determine the geometry of alluvial fan deposits and the timing of their deposition (poster), *Abstracts with Programs, Geological Society of America Annual Meeting*, v. 30, no. 7, p. A-139.

- [9] 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.
- [8] Granger, D. E., (1997) Downcutting rate of the New River from  $^{26}\text{Al}/^{10}\text{Be}$  in cave sediment, *The Association of American Geographers 93<sup>rd</sup> Annual Meeting, Fort Worth, Texas, 1-5 April, 1997*, p. 96.
- [7] Granger, D. E., (1997) Sediment burial dating with cosmogenic  $^{26}\text{Al}$  and  $^{10}\text{Be}$ , *EOS, Transactions of the American Geophysical Union*, v. 78, no. 46, p. F772.
- [6] Riebe, C. S., Kirchner, J. W., and Granger, D. E., (1997) Quantifying how topography, soil depth, and bedrock erodibility affect long-term erosion rates using cosmogenic nuclides in alluvial sediment, *EOS, Transactions of the American Geophysical Union*, v. 78, no. 46, p. F288.
- [5] Riebe, C. S., Granger, D. E., and Kirchner, J. W. (1996), Quantifying Effects of Climate and Topography on Long-Term Erosion Rates Using Cosmogenic Nuclide Concentrations in Alluvial Sediment, *EOS, Transactions of the American Geophysical Union*, v. 77, no. 46, p. 251.
- [4] Granger, D. E. (1996) A new technique for dating allogenic cave sediments using cosmogenic nuclides, *National Speleological Society National Convention, August 5-9, Salida, Colorado*.
- [3] Granger, D.E. and J.W. Kirchner (1995) Downcutting rate of the New River, Virginia, from  $^{26}\text{Al}/^{10}\text{Be}$  in buried river gravels *EOS, Transactions, American Geophysical Union*, v. 76, no. 46, p. F689.
- [2] Granger, D.E. and J.W. Kirchner (1994) Erosional response to tectonic forcing inferred from cosmogenic isotopes in alluvial sediment, *EOS, Transactions, American Geophysical Union*, v. 75, no. 44, p. 287.
- [1] Granger, D.E. and J.W. Kirchner (1994) Estimating catchment-wide denudation rates from cosmogenic isotope concentrations in alluvial sediment: Fort Sage Mountains, California, *Abstracts of the Eighth International Conference on Geochronology, Cosmochronology, and Isotope Geology*, (M.A. Lanphere, G.B. Dalrymple, B.D. Turrin eds.), U.S. Geological Survey Circular v. 1107, p. 116.

## GRANTS

- 2019-2021, *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).
- 2017-2020, *Dating the Cenozoic incision history of the Tennessee and Shenandoah Rivers with cosmogenic nuclides and  $^{40}\text{Ar}/^{39}\text{Ar}$  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  $^{26}\text{Al}$  and  $^{10}\text{Be}$  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-present

### Editorial

Associate Editor, *Journal of Human Evolution*, 2009-2011  
Associate Editor, *Journal of Geophysical Research: Earth Surface* 2003-2006  
Editorial board, *Geology*, 2001-2003

### Review panels

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

### University Service committees

Executive committee, PRIME Lab  
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, M.S. student

Adrian Singleton, M.S. student (co-advised with N. Lifton)

### Previous Graduate Students

William Odom, 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

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

### Visiting researchers past ~5 years

Prof. Guanjun Shen (Nanjing Normal University, China)

Prof. Zhijun Zhao (Nanjing Normal University, China)

Bin Gao (Nanjing Normal University, China)

Prof. Hung-Chun Chao (National Chung-Cheng University, Taiwan)

Kai Hu (Chinese Academy of Sciences, now Georgia Tech)

Liubing Xu (South China Normal University)

Hongshan Gao (Lanzhou University, China)

Fernando Laureano (Pontificia Universidade Católica de Minas Gerais, Brazil)

Dai Zhang (China University of Geosciences)

Hua Tu (China University of Geosciences)

Lan Luo (China University of Geosciences)

Xianmei Huang (South China Normal University)

Han Fei (China Earthquake Administration)