RICHARD V HEERMANCE

EDUCATION

Ph.D., University of California, Santa Barbara, CA	2007
M.S., Utah State University, Logan, UT	2002
B.A., The Colorado College, Colorado Springs, CO	1995

WORK EXPERIENCE

Chair**,** Dept. of Geological Sciences, CSU Northridge	August 2019–present
Professor, Dept. of Geological Sciences, CSU Northridge	June 2019–present
Associate Chair, Dept. of Geological Sciences, CSU Northridge	2018-2019
Associate Professor, Dept. of Geological Sciences, CSU Northridge	2014-2019
Assistant Professor, Dept. of Geological Sciences, CSU Northridge	2009-2014
Mendenhall Postdoctoral Research Fellow, USGS, Tucson, AZ	2007-2008
Visiting Professor, The Colorado College, Colorado Springs, CO	Spring 2007
Instructor, University of California, Santa Barbara	Winter 2006
Teaching Assistant, University of California, Santa Barbara	2002-2005
Teaching Assistant, Utah State University, Logan, UT	2000-2001
Engineering Geologist, Cotton, Shires and Associates, Los Gatos, CA	1998-2000
Heavy Equipment Operator, Antarctic Support Associates, Antarctica	1995-1998

PEER-REVIEWED PAPERS

Su, Q., J. Nie, Q. Meng, **R.V. Heermance,** L. Gong, Z. Luo, Z. Wang, R. Zhang, and C. Garzione (2019), Central Asian Drying at 3.3 Ma Linked to Tropical Forcing: Geophysical Research Letters, 10.1029/2019GL084648

Su, Q., J. Nie, Z. Luo, M. Li, **R.V. Heermance,** and C. Garzione (2019), Detection of Strong Precession Cycles from the Late Pliocene Sedimentary Records of Northeastern Tibetan Plateau, Geochemistry, Geophysics, Geosystems, 10.1029/2019GC008447

Heermance, R. V., J. Pearson, A. Moe, L. Langtao, X. Jianhong, C. Jie, F. Richter, C.N. Garzione, N. Junsheng, and S. Bogue (2018), Erg deposition and development of the ancestral Taklimakan Desert (western China) between 12.2 and 7.0 Ma, Geology, **46**, 10, pp. 919-922.

Luo, Z.., Q. Su, Z. Wang, **R. V. Heermance**, C.N. Garzione, M. Li, X. Ren, Y. Song, and J. Nie (2018), Orbital forcing of Plio-Pleistocene climate variation in a Qaidam Basin lake based on paleomagnetic and evaporite mineralogic analysis, Palaeogeography, Palaeoclimatology, Palaeoecology **510**, pp. 31-39, doi.org/10.1016/j.palaeo.2017.09.022.

Heermance, R. V., and D. Yule (2017), Holocene slip rates along the San Andreas Fault System in the San Gorgonio Pass and implications for large earthquakes in southern California: Geophysical Research Letters **44**, no. 11, pp. 5391-5400.

Gavillot, Y., A. Meigs, D. Yule, **R.V. Heermance**, T. Rittenour, C. Madugo, and M. Malik (2016), Shortening rate and Holocene surface rupture on the Riasi fault system in the Kashmir Himalaya: Active thrusting within the Northwest Himalayan orogenic wedge, Geological Society of America Bulletin **128**, pp. 1070-1094.

Lifton, N., C. Beel, C. Hättestrand, C. Kassab, I. Rogozhina, **R.V. Heermance**, M. Oskin, D. Burbank, R. Blomdin, N. Gribenski, M. Caffee, J. Heyman, M. Ivanov, Y. Li, Y. L, D. Petrakov, R. Usubaliev, A. Codilean, Y. Chen, J. Harbor, A. Stroeven (2014). Constraints on the late Quaternary glacial history of the Inylchek and Sary-Dzaz valleys from in situ cosmogenic 10Be and 26Al, eastern Kyrgyz Tian Shan, Quaternary Science Reviews **101**, pp. 77-90.

Heermance, R.V., A. Pullen, P. Kapp, C. Garzione, S. Bogue, L. Ding, P. Song (2013). Climatic and tectonic controls on sedimentation and erosion during the Plio-Quaternary in the Qaidam Basin (China), Geological Society of America Bulletin 125, no 5-6, pp. 833-856.

Rohrmann, A., **R. V. Heermance**, P. Kapp, F. Cai (2013), Wind as the primary driver of erosion in the Qaidam Basin, China, Earth and Planetary Science Letters **374**, 1-10.

DeVecchio, D.E., **R.V. Heermance**, M. Fuchs, and L.A. Owen (2012). Climate-controlled landscape evolution in the Western Transverse Ranges, California: Insights from Quaternary geochronology of the Saugus Formation and strath terrace flights, Lithosphere, pp 110-130, doi: 10.1130/L176.1.

Pullen, A., P. Kapp, A.T. McCallister, H. Chang, G.E. Gehrels, C.N. Garzione, **R.V. Heermance**, and L. Ding (2011) Qaidam Basin and northern Tibetan Plateau as dust sources for the Chinese Loess Plateau and paleoclimatic implications: Geology **39**, no. 11, pp 1031-1034, doi:10.1130/G32296.1.

Kapp, P., J.D. Pelletier, A. Rohrmann, **R. Heermance**, and J. Russell (2011), Wind erosion in the Qaidam basin, central Asia: Implications for tectonics, paleoclimate, and the source of the Loess plateau, Geological Society of America Today **21**, Issue 4/5, April/May 2011.

Heermance, R. V., J. Chen, D. B. Burbank, J. Miao (2008), Temporal constraints and pulsed Late Cenozoic deformation during the structural disruption of the active Kashi foreland, northwest China, Tectonics **27**, TC6012, doi:10.1029/2007TC002226.

Heermance, R., J. Chen, D. Burbank, C. Wang (2007), Chronology and tectonic controls of Late Tertiary deposition in the southwestern Tian Shan foreland, NW China, Basin Research **19**, 599-632.

Chen, J., **R. Heermance**, K. M. Scharer, D. W. Burbank, M. Jijun, C. S. Wang (2007), Quantification of growth and lateral propagation of the Kashi anticline, Southwest Chinese Tian Shan. Journal of Geophysical Research, **112**, doi:10.1029/2006JB004345

Sobel, E. R., Chen, J., **Heermance, R. V.** (2006), Late Oligocene - Early Miocene initiation of shortening in the Southwestern Chinese Tian Shan: Implications for Neogene shortening rate variations, Earth and Planetary Science Letters, **247**, 70-81.

Heermance, R. V. and J. P. Evans (2006), Geometric evolution of the Chelungpu fault: the mechanics of shallow frontal ramps and fault imbrication, Journal of Structural Geology, **28**, 929–938

Heermance, R. V., Z. K. Shipton and J. P. Evans (2003), Fault structure control on fault slip and ground motion during the 1999 rupture of the Chelungpu fault, Taiwan, Bulletin of the Seismological Society of America, **93**, 1034-1050.

GRANTS AND AWARDS

1) **2020** NSF -EAR Tectonics (#1946418, $278,858) Title: "RUI: Collaborative Research: Early Cenozoic basin development in the southwestern US: a record of extensional collapse following subduction of an oceanic plateau?". Co-PIs: R. Cecil, CSUN; Frank Sousa, Oregon State Univ.
2) **2015** Southern California Earthquake Center (sub-contract to NSF) #16194 ($21,488), Title: "Late Pleistocene slip rate of the western Pinto Mountain Fault, Morongo Valley, CA". Co-PI J.D. Yule, CSUN.
3) **2014** Southern California Earthquake Center (sub-contract to NSF) #15135 ($10,000), Title: "Collaborative Research: High-precision cosmogenic burial and exposure dating (10Be, 26Al, 36Cl) on late Pleistocene fan surfaces to constrain long-term San Andreas fault slip rates. Co-PI: N. Lifton, Purdue Univ.
4) **2014** NSF-EAR Tectonics 1348075 ($187,620), 03/01/14 – 02/28/17, Lead-PI, Title: "Collaborative Research: RUI: Plio-Quaternary History of Basin Evolution, Climate Change, and Fold Growth in the Qaidam Basin-Investigating Wind-enhanced Climate-Tectonic Feedback" Co-PI C. Garzione, U. Rochester.
5) **2013** Cotton, Shires, and Assoc. Grant ($21,354). Title: "10Be Dating of Moraines Near Waterhouse Peak, Sierra Nevada."
6) **2012** Southern California Earthquake Center Grant #12209 ($18,000, Title: "Mid-late Pleistocene slip rate through the San Gorgonio Pass from cosmogenic dating of the Heights Fanglomerate".
7) **2011** Southern California Earthquake Center Award #11043 ($1,000), Title: "Cosmogenic dating of faulted sedimentary deposits in the Transverse Ranges of Southern California: Presentation of results from 2009-2010 at the SCEC 2011 annual meeting".
8) **2011-2013** Petroleum Research Fund, Proposal #50776-UNI8 ($50,000), Title: "Diachronous Miocene and Pliocene Deposition Along the Southern Tian Shan Foreland, W. China: Implications on Facies Architecture, Chronostratigraphy, Paleogeogrpahy, and Structural Style".
9) **2010** Southern California Earthquake Center Award #10164 ($32,000), Title: "Earthquake record and slip rate of the San Gorgonio Pass fault zone: Testing the ShakeOut Scenario earthquake". Co-PI: D. Yule, CSUN.
10) **2009** CSUN Special Instructional Lottery Funds Proposal ($154,000). Title: "Funding for inter-departmental Geology-Geography Ground-based LiDAR Equipment". Co-PIs: D. Yule, J. Laity, A. Orme, CSUN.
11) **2009** Southern California Earthquake Center Award #09004 ($10,000). Title: "Re-calculating Quaternary uplift and shortening rates in the Ventura Basin with new 26Al/10Be burial ages from the Ojai Conglomerate".

CONFERENCE ABSTRACTS (*SINCE 2016*)

1) Yule, D., J. Matti, K. Kendrick, **R.V. Heermance** (2019), Evidence for inactivity since ~100,000 yrs bp on the northern route of the San Andreas fault, southern California, Geological Society of America Abstracts with Programs. Vol. 51, No. 4, ISSN 0016-7592, doi: 10.1130/abs/2019CD-329441
2) Matti, J., K. Kendrick, D. Yule, and **R.V. Heermance** (2019), The Mission Creek fault in the San Gorgonio Pass region: a long-abandoned strand of the San Andreas Fault, or a major player in the latest Quaternary San Andreas strain budget? Geological Society of America Abstracts with Programs. Vol. 51, No. 4, ISSN 0016-7592, doi: 10.1130/abs/2019CD-329432
3) Richter, F., **R.V. Heermance,** C.N. Garzione, A. Moe, M. Vilkas and X. Jianhong (2018), Tectonically forced carbonate oxygen and carbon isotope shifts since 15 Ma in the Tian Shan foreland, Tarim Basin, China. Geological Society of America Abstracts with Programs. Vol. 50, No. 6 doi: 10.1130/abs/2018AM-324327

4) Vilkas, M., **R.V. Heermance** and R. Cecil (2018), Interpreting complex detrital zircon spectra from intracontinental foreland basins: an example from the active Tian Shan, western China, Paper 58-4, Geological Society of America Abstracts with Programs. Vol. 50, No. 5, ISSN 0016-7592, doi: 10.1130/abs/2018RM-314298
5) Sample, B.D., R. Cecil, **R.V. Heermance** and M. Flowers (2018), Provenance of Miocene strata of the El Paso Basin, Southern California, and constraints on the uplift history of the southern Sierra Nevada, Geological Society of America Abstracts with Programs. Vol. 50, No. 5, ISSN 0016-7592, doi: 10.1130/abs/2018RM-314298
6) **R.V. Heermance**, J. Pearson, M. Vilkas, A. Moe, L. Liu, X. Jianhong, J. Chen, R. Richter, C. Garzione, J. Nie and S. Bogue (2017), 14.6 Ma aridification and development of the ancestral Taklimakan Desert between the Pamir and Tian Shan Orogens, Western China, Paper 329-5, Geological Society of America Abstracts with Programs. Vol. 49, No. 6, doi: 10.1130/abs/2017AM-301499
7) Dickey, N., **R.V. Heermance,** M.A. Plummer (2017), LGM and Younger Dryas glaciations in the Klamath Mountains, CA, evidence from 10Be exposure dating and numerical modeling, Paper No. 317-11 Geological Society of America Abstracts with Programs. Vol. 49, No. 6, doi: 10.1130/abs/2017AM-301499
8) Sample, B.D., R. Cecil, **R.V. Heermance** and M. Flowers (2017), Detrital zircon analysis of Miocene strata of the El Paso Basin, southern California, and new constraints on uplift of the southern Sierra Nevada, Paper No. 184-8, Geological Society of America Abstracts with Programs. Vol. 49, No. 6, doi: 10.1130/abs/2017AM-301499
9) Cohen, H.R., V. Zhao, **R.V. Heermance** and R. Cecil (2016), Constraints on the reorganization of the San Andreas Fault system in the late Miocene based on drainage development and syn-tectonic deposition of the Hungry Valley Formation, Tejon Pass, CA, Paper No 16-4, Geological Society of America Abstracts with Programs, v. 48, n.4.
10) Dickey, N, **R.V. Heermance** and M. Plummer (2016), Chronology and paleoclimate of late Pleistocene Glaciation in the Trinity Alps, CA, from cosmogenic 10Be and numerical modeling, 112th Annual GSA Cordilleran Section Meeting doi: 10.1130/abs/2016CD-274545
11) Gabriel, K., D. Yule and **R.V. Heermance** (2016b). Preliminary late Pleistocene slip rate for the western Pinto Mountain fault, Morongo Valley, southern California. Poster Presentation at 2016 SCEC Annual Meeting.
12) Gabriel, K., D. Yule and **R.V. Heermance** (2016a), Preliminary late Pleistocene slip rate for the western Pinto Mountain Fault, Morongo Valley, southern California, Paper No. 117-8, Geological Society of America *Abstracts with Programs*. Vol. 48, No. 7, doi: 10.1130/abs/2016AM-287249
13) Huerta, B., D. Yule and **R.V. Heermance** (2016), Off fault deformation and implications for slip rate along the southern San Andreas Fault in the San Gorgonio Pass, southern California, Paper No. 117-9, Geological Society of America Abstracts with Programs. Vol. 48, No. 7, doi: 10.1130/abs/2016AM-287249
14) Lifton, N., **R.V. Heermance**, D. Yule and B. Huerta (2016). Isochron burial dating of paleosols within the Whitewater Fan, northern Coachella Valley, California. Poster Presentation at 2016 SCEC Annual Meeting.
15) McDonald, E., R. Cecil, K.M. Marsaglia, **R.V. Heermance** and N.R. Riggs (2016), Stratigraphy and detrital zircon geochronology of the El Paso Mountains Permian metasedimentary sequence, southern California: A unique record of arc emergence along southwestern Laurentia: Geological Society of America Abstracts with Programs, v. 48, n.7.
16) Moe, A, **R.V. Heermance,** J. Nie, L. Li, R. Kreuzer, C.N. Garzione, L. Zeng, and Q. Su (2016), Magnetostratigraphic and Stable Isotopic Analysis of Playa-Lacustrine Deposits in the Qaidam Basin, China: Implications for Climate-Environmental Changes and Orbital Forcing Mechanisms During the Plio-Quaternary Transition, *Eos Trans. AGU 97* Fall Meet. Suppl., Abstract PP31E-04.

17) Zhao, V., R. Cecil, H. Cohen, and **R.V. Heermance** (2016), Detrital zircon provenance response to slip transfer from the San Gabriel fault to the San Andreas fault in Late Miocene-Early Pliocene Ridge Basin, southern California, American Geophysical Union Fall Meeting, EP13A-1024.
18) Zhao, V., H. Cohen, R. Cecil, and **R.V. Heermance** (2016), Detrital Zircon provenance of Pliocene – Miocene strata of Ridge Basin, southern California: Response to slip transfer from the San Gabriel fault to the San Andreas faults, South Coast Geological Society, Santa Ana, CA.

INVITED TALKS

1) **Utah State University**, Logan, Utah, February 26, 2018: "10Be cosmogenic dating of fault scarps along the San Andreas Fault in San Gorgonio Pass, Southern California: implications for slip rates & large earthquakes."
2) **University of California Riverside**, Riverside, CA, Mar 13, 2018: "12.2 Ma development of the ancestral Taklimakan desert, western China."
3) **Colorado School of Mines**, Golden, CO, November 2, 2017: "10Be cosmogenic dating of fault scarps along the San Andreas Fault in San Gorgonio Pass, Southern California: implications for large earthquakes."
4) **The Colorado College**, Colorado Springs, CO, October 9, 2017: "Slip rates along the San Andreas fault in the San Gorgonio Pass, Southern California, and implications for large earthquakes."
5) **The Colorado College**, Colorado Springs, CO, October 10, 2017:"12.2 Ma development of the ancestral Taklimakan desert, western China."
6) **Caltech,** Pasadena, CA, January 21, 2016, Slip rates along the San Andreas Fault in the San Gorgonio Pass, Southern California, and implications for large earthquakes
7) **University California Davis,** October 14, 2015, "Earthquakes and uplift along the San Andreas Fault system in the San Gorgonio Pass, CA – new insight from cosmogenic dating of offset terraces"
8) **Southern California Earthquake Center & SoSAFE Geochronology Workshop**, October 28, 2014, Kellogg West Conference Center, Pomona, CA. "TCN results from San Gorgonio Pass: terrace ages and inheritance issues in Millard Canyon."
9) **University of Southern California**, October 8, 2014, "Feedbacks between climate change and tectonics with the Qaidam Basin, China."
10) **University of California Los Angeles**, January 11, 2012, "Climatic and tectonic feedbacks and implications on sedimentation, deformation, and erosion at the Plio-Quaternary boundary in the Qaidam Basin, China: Evidence from magnetostratigaphy, geochemistry, and stratigraphic analysis."
11) **Occidental College**, November 9, 2011, "Climatic vs Tectonic controls on sedimentation & erosion in the Qaidam Basin, China, & implications for uplift of the Tibetan Plateau."
12) **California State University Fullerton**, April 21, 2010, Geomorphic surfaces in southern California: frustration and insight from cosmogenic nuclides, optically stimulated luminescence, & 14C.

SERVICE TO THE UNIVERSITY (CSUN)

- Indirect Costs Task Force, 2017-2018. Convened at the request of the Provost to evaluate modes of redistributing indirect costs from grants.
- Water Cluster Hiring Committee Member, 2016 (Geology Dept. representative)
- College of Science and Mathematics Scholarship and Awards Committee, 2012-2015
- Lab Space Study Advisory Council, Academic Resources and Planning, 2014

- International Education Council, Tseng College, 2014.
- Ad Hoc committee on Academic Space Planning, 2013

SERVICE TO DEPARTMENT OF GEOLOGICAL SCIENCES

- Chair, Department of Geological Sciences, 2019 – present.
- Associate Chair, Department of Geology, 2018 – 2019
- 12 MS theses advised, 17 undergraduate theses advised, 21 MS thesis committees served.
- Department Curriculum Committee, co-chair, 2018-19; chair 2016-17; participant 2014-16
- Geology Club Advisor, 2018-2019
- Geology Department Technician Search Committee, 2016-2017
- Geology Department Personnel Committee, 2016-2017
- Department liaison for new lab construction for Eucalyptus Hall 2004 (mineral separation lab) and Eucalyptus Hall 2219 (hood lab), 2014-2016
- Undergraduate advisor, 2015-2017
- Chair of the Paleontology/Paleoclimate Faculty Search Committee, 2014-2015.
- Participant and co-leader of annual Departmental "Fall Field Frolic"
- Departmental Seminar Speaker Coordinator, 2012-2013, Fall, 2016
- Graduate Selection Committee (chair), Geology Dept., CSUN, 2009-2014, 2014-2017
- Curriculum Committee, Geology Dept., CSUN, 2009-present
- Departmental Review Committee on "future hires" chair, 2011
- Student Scholarship Committee, Geology Dept., CSUN, 2009-2012

SERVICE TO THE COMMUNITY

- Field Trip Chair, 2020 GSA Cordilleran Section Annual Meeting, May 12-14, Pasadena, CA
- Invited manuscript referee & proposal reviewer, 2014-2018 (39 reviews–including NSF proposals (4), Tectonics (7), EPSL (7), Nature Geoscience (1), Geology (2), J. Geophys. Res (2))
- Invited Instructor for Topanga State Park Docents, Topanga Canyon, annually: 2018-2019
- Sloss Award Committee, GSA Sedimentary Geology Division, 2014-2017.
- Session convener, GSA Cordilleran Section Annual Meeting, April 4-6, 2016

PROFESSIONAL SOCIETY MEMBERSHIPS

- American Geophysical Union, 1999-present.
- Geologic Society of America, 1998-present.
- American Assoc. Petroleum Geologists, 2001-2006.
- Royal Geologic Society of Goleta (UCSB geology club), vice president, 2003-2004.
- Seismological Society of America (2003-2016)

COURSES TAUGHT AT CSUN

GEOL 101: Geology of Planet Earth, F16, F14, F12, F11, F10, S09, F09
Level: General Education course designed for all class-levels.
Scope: Basic geologic concepts and the Scientific Method.
GEOL 235: Introduction to Field Methods, S14
Level: Sophomore-Junior Geology Majors

Scope: Learn basic techniques of field mapping and report writing

GEOL 314/L: Earth Systems, F15, F16

Level: Sophomore-Junior level Geology major course

Scope: Introduces Earth Systems (Hydrosphere, Atmosphere, Biosphere, Geosphere) and how they apply to Geology and Earth History.

GEOL 341/L: Sedimentology and Stratigraphy F18, S20

Level: Junior-Senior level

Scope: This course covers the origin, characteristics, and significance of sedimentary rocks.

GEOL 430a: Summer Field Geology, Summers, 2017-2019

Level: Seniors

Scope: Geologic mapping and report development

GEOL 443/L: Stratigraphy, CSUN, S16, S15, S14, S13, S12, S11, S10.

Level: Junior-Senior Geology Majors and Graduate students

Scope: Basin analysis techniques.

GEOL 490: Geology Capstone, F18

Level: Senior Geology Majors

Scope: The causes of the Montecito, CA debris flows of January, 2018

GEOL 551: Quaternary Geochronology, S19, S16, F13, F11, F09

Level: Senior Geology Majors & Graduate Students

Scope: Learning how to date geologic features younger than 2.6 million years.