Robert S. Anderson

Curriculum Vitae and Publications

contact information
INSTAAR
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personal history
born 17 November 1952, Denver, Colorado.
married 28 June 1987 to Suzanne Prestrud
twin daughters Grace and Hannah born September 19, 1999

present position
Distinguished Professor, Department of Geological Sciences, University of Colorado, Boulder
Fellow, Institute of Arctic and Alpine Research (INSTAAR)

education
Ph.D., Department of Geological Sciences, University of Washington, Seattle, Washington, 1986
M.S., Department of Earth Sciences, Stanford University, Stanford, California, August 1977
B.A. in Geology, Williams College, Williamstown, Massachusetts, June 1974.

positions held
Post-doctoral research fellow, Division of Physics, Mathematics and Astronomy, California Institute of Technology, Pasadena, California, 1986-1988.
Assistant Professor, Department of Earth Sciences, University of California, Santa Cruz, 1988-1992.
Visiting scientist, Department of Geology and Geophysics, University of Wyoming, 1995
Associate Professor, Department of Earth Sciences, University of California, Santa Cruz, 1992-1997.
Professor, Department of Earth Sciences, University of California, Santa Cruz, 1997-2003.
Visiting scientist, INSTAAR, University of Colorado, 2001-2002
Associate Professor, Department of Geological Sciences, University of Colorado, Boulder 2003-2006

awards
NSF Presidential Young Investigator Award 1991-1996
Gladys Cole Award for research in arid regions, Geological Society of America, 1995
Fellow, American Geophysical Union, 2006

Hazel Barnes Prize, top award at CU Boulder recognizing "the enriching relationship between teaching and research", 2014
G.K. Gilbert award, AGU Earth and Planetary Surface Processes (EPSP) section, 2015
University of Colorado Distinguished Professor, 2015
AGU Citation for excellence in reviewing, JGR-Earth Surface, 2018
Fellow, Geological Society of America, 2019
National Academy of Sciences, 2021
Kirk Bryan Award of GSA, 2023. Shared with co-authors for Pendleton and others (2019) paper.

professional societies

American Geophysical Union, Geological Society of America, American Quaternary Association, International Glaciological Society

Teaching

Courses taught at CU

Fall

Earth catastrophes and natural hazards. Introductory earth sciences class employing all rapid events as leverage to discuss the cosmic setting of the Earth, plate tectonics driven by deep-earth processes, and surface processes powered ultimately by the Sun.

Geomechanics. Graduate class in processes of heat transport and fluid mechanics from 1st principles. (taught all years except 2007 and 2011)

Glaciers and Permafrost. Co-taught once with Suzanne Anderson (Geography). Now taught in alternate years by Suzanne Anderson. Covers cryospheric processes and history.

The Cryosphere. Graduate class covering physics of cryospheric processes and both geologic and human history of exploration.

Advanced Geomorphology. Co-taught with Greg Tucker. Graduate course in which weekly experiments led to exploration of a variety of surface processes.

Reading seminar on landscape evolution in southern Rockies. Co-taught with Craig Jones in Fall 2005.

Reading seminar in topics in geomorphology. Co-hosted with Greg Tucker. Topics vary by semester.

Introduction to the Geological Sciences faculty. Organize faculty for their weekly presentations, and help to run introductory fieldtrip.

Spring

Reading seminar in topics in geomorphology. Co-hosted with Greg Tucker. Topics vary by semester.

Planet Earth. Introduction to Earth Sciences with a system focus, and emphasis on the surface of the planet and its habitability.

Geomorphology. Undergraduate class with a few graduate students. Survey class in processes shaping the planet's surface, with lab and major field trip.

Modeling of landscapes. Co-taught with Greg Tucker, roughly every other year. Introduction to numerical modeling in Earth sciences, with focus on geomorphic features.

Advising

Past postdoctoral researchers (7)

Elizabeth Safran (2000-2002 at UCSC) Ph.D. from UC Santa Barbara. Now professor at Lewis and Clark College and chair of Environmental Studies Program.

Mark Kessler (2002-2003 at UCSC, 2003-2005 at CU) Ph.D. from UC San Diego.

Miriam Dühnforth (2007-2011 at CU) Ph.D. from ETH Zurich. Currently employed in insurance industry as analyst of geologic hazard, Munich Germany.

Jill Marshall (2015-2017) Ph.D. U. Oregon. Cross-CZO postdoc sharing time with Eel CZO at Berkeley, focused on the role of trees as geomorphic agents. Now Associate Professor at Portland State as of Fall 2023.

Matt Rossi (2016-2022) (shared advising with Greg Tucker and Suzanne Anderson as part of Earth Lab) Ph.D. Arizona State. Now PRA with CIRES and EarthLab.

Ben Lehmann (2021- 2022) Ph.D. from Lusanne, Switzerland. Rock glaciers in the Alps and Colorado Rockies. Now postdoc at University of Grenoble, France.

Matthias Troch (2023-2024) Ph.D. University of Ghent, Belgium. Patagonian icecap. Now at Belgium energy conservation company.

Past graduate students (24 Ph.D., 16 M.Sc.)

Jeffrey Scott Marshall (Masters: August 1991) Neotectonics of the Nicoya Peninsula, Costa Rica: A look at forearc response to subduction at the Middle America Trench. Obtained Ph.D. from Penn State 2000. Since 2001 Fall, Jeff has been a professor at Cal Poly Pomona College. (marshall@csupomona.edu)

Nan Rosenbloom (Masters: August 1992) Calibration of coupled hillslope and channel process model in a marine terraced landscape, Santa Cruz, California. Obtained Ph.D. from University of Colorado, 1997. Now employed at NCAR, Associate Scientist in Carbon dynamics group. (nanr@ucar.edu)

Richard McDonald (Masters: March 1993) Eolian dune dynamics as constrained by field, laboratory and numerical experiments. Permanent employee of USGS, Boulder Colorado, in charge of sediment transport model development. (rmcd@uwsgs.gov)

Kirby L. Bunas (Masters: June 1993 -- in Computational Mathematics Program, UCSC) The mechanics of aeolian ripple sorting and stratigraphy as visualized through a cellular automaton model. Teaches at Sierra Foothill College.

Nicholas M. Johnson (Ph.D.: September 1994) Analysis of alluvial hydrostratigraphy using indicator geostatistics, with examples from Santa Clara Valley, California (note: my role here was to advise Nick in the aftermath of the untimely death of his advisor, Shirley Dreiss). Geological consultant, Bay Area.

Greg S. Dick (Masters: June 1995) Documentation of ephemeral flows n the upper Blue Hills badlands, Utah. Went on for Ph.D. at UCSC, see Greg Hancock below.

Kirsten M. Menking (Ph.D.: July 1995) Climate and geomorphic history of Owens Valley, CA, as deduced from analysis of the 330m USGS Owens Lake core OL92. Professor at Vassar. (kimenking@vassar.edu)

Lawrence M. Gilpin (Ph.D.: August 1995; co-advised by Casey Moore) Holocene paleoseismicity and coastal tectonics of the Kodiak Islands, Alaska. Principal, Gilpin and Associates (Engineering Geology), Fairfax, CA.

Katherine Howard (coursework Masters: March 1997). As of August 2005 a Ph.D. Student at University of Texas El Paso working on arid region geomorphology.

Greg Sena (coursework Masters: March 1997). Geologic consultant, southern California

Robert W. Schultz (M.Sc.: June 1997) Hydrological monitoring and water balance of Wilder Creek, coastal California. Geological consultant, Oakland.

Alex L. Densmore (Ph.D.: June 1997) Use of GPS, detailed field mapping, and landscape evolution models to constrain late Cenozoic faulting in the basin and range province of eastern California. Lecturer, University of Trinity, Dublin 1998-2001. Lecturer at ETH June 2001-2007. Professor of Geography and Deputy Director - Institute of Hazard & Risk Research, Durham, UK. (a.l.densmore@durham.ac.uk)

James L. Repka (Ph.D.: March 1998) Exposure ages of depositional surfaces using cosmogenic radionuclides: Applications to strath terraces in the western U.S. Professor and chair, Department of Geology, Earth and Marine Sciences, Saddleback College, Orange County CA. (jrepka@saddleback.edu)

Gregory S. Hancock (Ph.D.: June 1998) Bedrock channel evolution: dates and simulations of fluvial terrace development and measurements of rock erosion rates. Professor, College of William and Mary, Virginia. (gshanc@facstaff.wm.edu)

Carol V. Creasey (Ph.D.: September 1998) Chemistry of shallow groundwater: role of colloids (note: advising of Carol was inherited from the untimely death of Shirley Dreiss. The advising was shared with Ken Bruland and Barbara Bekins.)

David M. Schleupner (Masters: June 1999) A hydrologic model of Wilder Creek, Wilder Ranch State Park, California. Web consultant.

Erin R. Kraal (Masters: September 2001) The 1999 and 2000 Hidden Lake outburst floods on the Kennicott Glacier, Wrangell St Elias mountains, Alaska. The advising was shared with Suzanne Anderson. Ph.D. candidate at UCSC working on planetary geology with Eric Asphaug (ekraal@es.ucsc.edu)

Lesley A. Perg (Ph.D.: September 2001) Cosmogenic radionuclide constraints on active margin coastline uplift and geomorphic rates, Santa Cruz, California, USA. Postdoc in

Germany 2001-2, Assistant professor in Geology, U. Minnesota as of Fall 2002. (lperg@umn.edu)

Kelly MacGregor (Ph.D.: March 2002) Arrived 1996, Williams College. Modeling and field constraints on glacier dynamics, erosion and alpine landscape evolution. NASA graduate fellowship. Mendenhall post-doc with USGS 2002-2003; Assistant professor at MacAlester College as of Fall 2003. Associate Professor (macgregor@macalester.edu)

Catherine A. Riihimaki (Ph.D.: August 2003) Arrived 1998, Williams College. Two projects: Sediment output from a small glacial catchment, Alaska; late Cenozoic exhumation of the Laramide basins, western US. NSF Graduate fellowship. Teaching Fall 2003 as a sabbatical replacement at Colby College. Started Keck Postdoctoral Fellow at Department of Geology, Bryn Mawr College in Fall 2004. (criihima@brynmawr.edu)

Carissa Carter (M.Sc. June 2004) Arrived 2002, Williams College. Evolution of slot canyons in massive sandstones of the arid southwestern US using field and experimental tools. Employed at USGS Pacific Marine Branch, Santa Cruz, California as of July 2004. Stanford experimental design program graduate. Adjunct Professor, Hasso Plattner Institute of Design, Stanford. (carissac@stanford.edu)

Peter Adams (Ph.D.: September 2004) Arrived 1999, Penn State; Ph.D. candidate as of February 2001) Tectonic geomorphology. Focus on two problems: the interactions of rivers with rising topography associated with blind thrusts, and evolution of coastal map-view pattern on active margins due to differential seacliff retreat. 1-year sabbatical replacement teaching position at Washington and Lee in Fall 2004. Post-doctoral position at Scripps starting Fall 2005. Associate Professor at University of Florida, Geology Department. (adamsp@ufl.edu; http://www.clas.ufl.edu/users/padams/)

Greg Stock (Ph.D.: September 2004) Arrived 1999, Humboldt State; Ph.D. candidate as of March 2002. Advising shared with Jim Zachos. Caves as archives of tectonic and paleoclimate information. Focus on sediments and speleothems from the caves of the western Sierras, dating of which constrains river incision rates, and stable isotopes in which constrain variation in the hydrologic system. Turner Postdoctoral Fellowship University of Michigan 2005. Started as Yosemite National Park Geologist January 2006. (greg_stock@nps.gov)

Michael Loso (Ph.D.: December 2004) Arrived 2000, UC Santa Barbara, U. Vermont; Ph.D. candidate as of November 2002. NSF Graduate Fellowship. Advising shared with Suzanne Anderson and Dan Doak (Biology). Climate history as read through varved records in glacially dammed lakes, Alaska. Enhancement of lichemometry method for dating late Holocene events. As of summer 2017, Wrangells National Park natural resources manager.

Zack Guido (M.Sc. July 2006) Arrived CU Fall 2004, Lafayette College 2000, followed by 3 years in Peace Corps in Bolivia. Thesis: Pacing the post-LGM demise of the Animas Valley glacier and the San Juan Mountain Icecap, Colorado. Starts his own NGO to establish water supplies for 3rd world communities late 2006; Ph.D. student University of Arizona 2009. University of Arizona Program Manager and Research Scientist, Joint University of Arizona

& Columbia University International Research and Application Program (IRAP) (zguido@email.arizona.edu)

Tim Bartholomaus (M.Sc. June 2007) Arrived CU Fall 2005, Dartmouth 2002. Evolution of sliding on Kennicott Glacier, Alaska, in the face of seasonal, daily and outburst flood inputs of water. Lead instructor, Wildlands Institute summer fieldcourse, summer 2007, McCarthy Alaska. Summer 2007 employed at Balance Hydrologic, hydrology consulting company, Berkeley. Ph.D. University of Alaska Fairbanks 2013. Postdoc University of Texas, Austin 2013-2015. Assistant professor, University of Idaho 2016.

Maureen Mason Berlin (Ph.D.: May 2009) Arrived CU in Fall 2004, UC Berkeley 2002. Ph.D. candidate as of November 2006. Landscape evolution of the Roan Plateau, western Colorado. Online teaching of geology courses, CU.

Nora Matell **(**Masters May 2009) Arrived CU in Fall 2007, B.Sc. from Williams College Spring 2005. Arctic coastal retreat, North slope of Alaska. Teaching high school sciences, Denver Public Schools 2008-2014; teaching STEM classes Thailand, 2014-15; teaching K-12 in Anchorage Alaska.

Dylan Ward (Ph.D.: May 2010) Arrived CU in Fall 2004, M.Sc. from Virginia Tech Spring 2004. Glacial sculpting of granite-cored mountain ranges. Postdoc, University of New Mexico Fall 2010. Associate professor, University of Cincinnati.

Kali Abel (M.Sc., April 2012) Arrived CU Fall 2009, B.Sc. from Bates College 2007. Assistant professor, environmental studies, University of Portland.

Andy Wickert (Ph.D.: April 2014) Arrived CU Fall 2008, B.Sc. from MIT Spring 2008. Impact of Pleistocene glaciation and its geophysical effects on North American river systems. Postdoc in Potsdam Germany 2014-15. Associate professor, U. Minnesota.

Leif Anderson (Ph.D.: November 2014) Arrived CU Fall 2007, B.Sc. from Montana State 2007. Glacier response to climate change: modeling the effects of weather and debris-cover. Postdoc in Iceland and at Simon Fraser, Canada; 2018 postdoc with Dirk Scherler, GFZ, Potsdam. University of Utah research professor in Geology.

Melissa Foster (Ph.D.: January 2016) Arrived Fall 2010; Masters Humboldt State 2010. Bureau of Reclamation, Lakewood Office, started May 2016.

Katy Barnhart (Ph.D.: May 2015) Arrived Fall 2008; Masters CU with Kevin Mahan 2010. Postdoc with Annenburg School for the Science of Science Communication, U. Pennsylvania. Postdoctoral researcher with Greg Tucker, CU, on Landlab project, started October 2016.

Postdoctoral researcher with Greg Tucker, CU, on Landlab project, started October 2016. Full time researcher at USGS starting Fall 2020.

Eric Winchell (Ph.D.: May 2017) Arrived Fall 2012; B.Sc., UC Berkeley. Understanding the geomorphic imprint of the northern pocket gopher on the subalpine zone of the Colorado Front Range. Modeling specialist, Navy environmental branch, San Diego, started Fall 2018.

William Armstrong (Ph.D.: May 2017) Arrived Fall 2012; B.Sc., Boston College. Glacier sliding from space: multi-scale remote sensing, geodesy, and numerical modeling to understand glacier mechanics. Assistant professor, Appalachian State Geology department, started Fall 2017.

Rachel Glade (Ph.D.: April 2019) Arrived Fall 2014; B.Sc., U. Penn. Hillslope Evolution in Block-Controlled Landscapes. Postdocotoral researcher, Los Alamos National Lab, starting Summer 2019. Assistant Professor at Rochester starting Fall 2021.

Kelly Kochanski (Ph.D.: April 2020) Arrived Fall 2015; B.Sc., MIT (shared advising with Greg Tucker). Evolution of Snow Bedforms. Researcher at small data-intensive startup in Boulder as of summer 2020.

Aaron Hurst, (Ph.D.: April 2021) Arrived Fall 2016, B.Sc., Vanderbilt. Bedrock River Erosion by Plucking. Researcher at Bureau of Reclamation beginning summer 2021.

Naomi Ochwat (Ph.D.: November 2024) co-advised with Ted Scambos of CIRES. Postdoc at CIRES beginning winter 2025

Juliana Ruef **(**Masters: April 2025) Arrived Fall 2023, B.A. UC Berkeley. advising shared with Brad Markle. "Thermal Controls on Rock Glacier Stability: Modeling the Effects of Insulating Debris and Climatic Forcing"

current graduate students

Jacob Monahan Ph.D. (Ph.D. Geophysics Program) arrived Fall 2022.

Juliana Ruef Ph.D. (UC Berkeley) advising shared with Brad Markle

current postdoctoral fellows

undergraduate student theses (23) recent examples:

Selena Neale, Pinedale glaciation of Longs Peak and Glacier Gorge, Rocky Mountain National Park, October 2016. Cum laude.

Brett Oliver, Utilizing Remote and Numerical Methods to Provide Constraints for the Seasonal Development and Topographic Profiles of Rock Glaciers, May 2017. Summa cum laude.

Clea Bertholet, Snow bedform growth as a function of wind speed and snow age, May 2017. Cum laude.

Garret Hachman, May 2017. (reading committee member; thesis directed by Suzanne Anderson)

Dylan Lanka, May 2018. (reading committee member; thesis directed by Suzanne Anderson)

Kieran Stone, May 2025. Modeling runoff from the South Cascade glacier**.** (on committee led by Jed Brown of Computer Science, and Brad Markle of Earth Science)

publications

1978

1. Wobus, R.A., and Anderson, R.S. (1978), Petrology of the precambrian intrusive center at Lake George, Southern Front Range, Colorado. *Journal of Research, USGS* 6: 81-94.

1981

2. Hallet, B. and Anderson, R.S. (1981) Detailed glacial geomorphology of a proglacial bedrock area at Castleguard Glacier, Alberta, Canada. *Zeitschrift fur Gletscherkunde und Glazialgeologie* 16: 171-184.

1982

3. Anderson, R.S., Hallet, B., Aubry, B., and Walder, J. (1982), Observations in a cavity beneath the Grinnell Glacier, Montana. *Earth Surface Processes and Landforms* 7: 63-70.

1986

4. Anderson, R.S. and Hallet, B. (1986), Sediment transport by wind: Toward a general model. *Geological Society of America Bulletin* 97: 523-535.
5. Anderson, R.S. (1986), Erosion profiles due to particles entrained by wind: Application of an eolian sediment transport model. *Geological Society of America Bulletin* 97: 1270-1278.
6. Werner, B.T., Haff, P.K., Livi, R.P., and Anderson, R.S. (1986), The measurement of eolian ripple cross-sectional shapes. *Geology* 14: 743-745.

1987

7. Anderson, R.S. (1987), Eolian sediment transport as a stochastic process: The effects of a fluctuating wind on particle trajectories. *Journal of Geology* 95: 497-512.
8. Anderson, R.S. (1987), A theoretical model for aeolian impact ripples. *Sedimentology* 34: 943-956.

1988

9. Anderson, R.S. (1988), The pattern of grainfall deposition in the lee of aeolian dunes. Sedimentology 35: 175-188.

10. Sharp, M., Lawson, W., and Anderson, R.S. (1988) Tectonic processes in a surge-type glacier -- an analogue for the emplacement of thrust sheets by gravity tectonics. *Journal of Structural Geology* 10: 499-515.
11. Anderson, R.S. and Haff, P.K. (1988), Simulation of eolian saltation. *Science* 241: 820-823.

1989

12. Anderson, R.S. and Humphrey, N.F. (1989) Interaction of weathering and transport processes in the evolution of arid landscapes *in* Cross, T., editor, *Quantitative Dynamic Stratigraphy*, Prentice- Hall, p.349-361.

1990

13. Anderson, R.S. and Weber, G.E. (1990), Marine terrace deformation pattern: Its implications for repeat times of Loma Prieta earthquakes and for the long term evolution of the Santa Cruz Mountains *in* D. Schwartz and D. Ponti, eds., Fieldguide to neotectonics of the San Andreas Fault system, Santa Cruz Mountains, in light of the 1989 Loma Prieta Earthquake. *USGS Open file report 90-274*, p.6-14.
14. Anderson, S.P., and Anderson, R.S. (1990), Debris-flow benches: Dune-contact deposits record paleo-sand dune positions, north Panamint Valley, Inyo County, California. *Geology* 18: 524-527.
15. Anderson, R.S., Orange, D.L., and Schwartz, S.Y. (1990), Implications of the October 17th 1989 Loma Prieta earthquake for the emergence of marine terraces along the Santa Cruz coast, and for long term evolution of the Santa Cruz Mountains *in* R.E. Garrison, et al., editors, *Geology and tectonics of coastal California, San Francisco to Monterey*. (Volume and Guidebook) Pacific Section AAPG, Bakersfield, California, p.205-224.
16. Anderson, R.S. (1990), Evolution of the northern Santa Cruz Mountains by advection of crust past a San Andreas Fault bend. *Science* 249: 397-401.
17. Schwartz, S.Y., Orange, D.L. and Anderson, R.S. (1990), Complex fault interactions in a restraining bend on the San Andreas Fault, southern Santa Cruz Mountains, California. *Geophysical Research Letters* 17: 1207-1210.
18. Anderson, R.S. (1990), Saltation of sand: A qualitative review with biological analogy. *Proceedings of the Royal Society of Edinburgh* 96B: 149-165.

1991

19. Anderson, R.S. (1991), Eolian ripples as examples of self-organization in geomorphological systems. *Earth- Science Reviews* 29: 77-96.
20. Anderson, R.S., Sorenson, M.L. and Willetts, B.B. (1991), A review of recent progress in the understanding of aeolian sediment transport. *Acta Mechanica* Supplement 1: 1-20.
21. Anderson, R.S. and Haff, P.K. (1991), Wind modification and bed response during saltation of sand in air. *Acta Mechanica* Supplement 1: 21-51.

1992

22. Griggs, G.B., Marshall, J.S., Rosenbloom, N.A. and Anderson, R.S. (1992), Ground cracking in the Santa Cruz Mountains *in* Loma Prieta Earthquake: Engineering Geologic Perspectives, J. Baldwin and N. Sitar, eds. *Association of Engineering Geologists Special Publication*. 1: 25-42.

23. McDonald, R.R. and Anderson, R.S. (1992), The morphology and dynamics of natural and laboratory grain flows. ASCE, *Engineering Mechanics, proceedings of the ninth conference.* p.748-751.

1993

24. Haff, P.K. and Anderson, R.S. (1993), Grain-scale simulations of loose sedimentary beds: The example of grain-bed impacts in aeolian saltation *Sedimentology* 40: 175-189.
25. Anderson, R. S. and Bunas, K. L. (1993), The mechanics of aeolian ripple sorting and stratigraphy as visualized through a cellular automaton model. *Nature* 365: 740-743.

1994

26. Orange, D.L., Anderson, R.S. and Breen, N. (1994), Regular submarine canyon spacing in the submarine environment: the link between hydrology and geomorphology. *GSA Today* 4: 29 & 36-39.
27. Anderson, R.S. and Menking, K.M. (1994), The Quaternary marine terraces of Santa Cruz, California: Evidence for coseismic uplift on two faults, *Geological Society of America Bulletin* 106: 649-664.
28. Rosenbloom, N.A. and Anderson, R.S. (1994), Evolution of the marine terraced landscape, Santa Cruz, California. *JGR* 99: 14,013-14,030.
29. Anderson, R.S. (1994), Evolution of the Santa Cruz mountains, California, through tectonic growth and geomorphic decay. *JGR* 99: 20,161-20,179.

1995

30. McDonald, R.R. and Anderson, R.S. (1995), Experimental verification of aeolian saltation and lee side deposition models *Sedimentology* 42: 39-56.
31. Marshall, J. S. and Anderson, R.S. (1995), Quaternary uplift and seismic cycle deformation, Peninsula de Nicoya, Pacific Coast, Costa Rica. *Geological Society of America Bulletin* 107: 463-473.
32. Small, E. E. and Anderson, R.S. (1995), Geomorphically driven late Cenozoic rock uplift in the Sierra Nevada, California. *Science* 270: 277-280.

1996

33. Anderson, R.S., Repka, J.L. and Dick, G.S. (1996), Dating depositional surfaces using in situ produced cosmogenic radionuclides. *Geology* 24: 47-51.
34. Burbank, D.W., Leland, J., Fielding, E., Anderson, R.S., Brozovic, N., and Reid, M., E., and Duncan, C. (1996), Bedrock incision, uplift, and threshold hillslopes in the northwest Himalaya. *Nature* 379: 505-510.
35. Anderson, R.S. and Hallet, B. (1996), Simulating magnetic susceptibility profiles in loess as an aid in quantifying rates of dust deposition and pedogenic development. *Quaternary Research* 45: 1-16.
36. McDonald, R.R. and Anderson, R.S. (1996), Constraints on eolian grain flow dynamics through laboratory experiments on sand slopes. *Journal of Sedimentary Research* 66: 642-653.

1997

37. Dick, G.S., Anderson, R.S., and Sampson, D. (1997), Controls on flash flood magnitude and hydrograph shape, Upper Blue Hills badlands, Utah: Application of an acoustic sensor for stream gauging. *Geology* 25: 45-48.
38. Densmore, A.L., Anderson, R.S., McAdoo, B. and Ellis, M.E. (1997), Hillslope evolution by bedrock landslides. *Science* 275: 369-372.
39. Abbott, L.D., Silver, E.A., Anderson, R.S., Smith, R., Ingle, J.C., Kling, S.A., Haig, D., Small, E., Galewsky, J., and Sliter, W. (1997), Measurement of tectonic surface uplift rate in a young collisional mountain belt. *Nature* 385: 501-507.
40. Densmore, A.L. and Anderson, R.S., (1997), Recent tectonic geomorphology of the Ash Hill fault, Panamint Valley, California. *Basin Research* 9: 53-63.
41. Haeussler, P. and Anderson, R.S., The Twin Peaks "fault" -- not a tectonic or seismogenic structure. (1997), *USGS Professional Paper 1574, Geologic Studies in Alaska by USGS, 1995.* pp 93-100.
42. Small, E.E., Anderson, R.S., Finkel, R. and Repka, J. (1997), Erosion rates of summit flats using cosmogenic radionuclides. *Earth and Planetary Science Letters* 150: 413-425.
44. Repka, J.L., Anderson, R.S., and Finkel, R.C. (1997), Cosmogenic dating of fluvial terraces, Fremont River, Utah. *Earth and Planetary Science Letters* 152: 59-73.

1998

45. Small, E. E. and Anderson, R.S. (1998), Pleistocene relief production in Laramide Mountain Ranges, western U.S. *Geology* 26: 123-126.
46. Densmore, A.L., Ellis, M.E. and Anderson, R.S. (1998), A numerical model of landscape evolution by bedrock landslides *Journal of Geophysical Research* 103: 15-203-15,220.
47. Zhu, R., Coe, R.S., Guo, B., Anderson, R.S. and Zhao, X. (1998), Inconsistent paleomagnetic recording of the Blake Event in Chinese loess related to sedimentary environment. *Geophysical Journal International* 134: 867-875.
48. Hancock, G. S., Anderson, R.S. and Whipple, K. X (1998), Bedrock erosion by streams: Beyond stream power. *Rivers over Rock*, Tinkler, K. and E. Wohl, eds., pp. 35-60.
49. Anderson, R.S. (1998) Near-surface thermal profiles in alpine bedrock: Implications for the frost-weathering of rock. *Arctic and Alpine Research* 30: 362-372.
50. Small, E. E. and Anderson, R.S. (1998) Pleistocene relief production in Laramide Mountain Ranges, western U.S. (reply to comment by J. Schaffer) *Geology* 26: 123-126.

1999

51. Small, E. E., Anderson, R.S., Hancock, G. S., and Finkel, R. C. (1999), Estimates of regolith production from ^{10}Be and ^{26}Al: Evidence for steady state alpine hillslopes *Geomorphology* 27: 131-150.
52. Hancock, G.S., Anderson, R.S., Chadwick, O. A., and Finkel, R. C. (1999), Dating fluvial terraces with ^{10}Be and ^{26}Al profiles, Wind River, Wyoming. *Geomorphology* 27: 41-60.
53. Anderson, R. S., Densmore, A. L. and Ellis, M. A., (1999) Marine terrace generation and degradation *Basin Research* 11: 7-20.
54. Ellis, M. E., Densmore, A. L., and Anderson, R. S. (1999), Development of mountainous topography in the Basin Ranges, USA. *Basin Research* 11: 21-42.

55. Anderson, S. P., Howard, K. M., Anderson, R. S. and Humphrey, N. F. (1999), Physical and chemical characterization of a spring flood event: evidence for the storage of water. *J. Glaciology* 45 (150): 177-189.

2000

56. Whipple, K. X, Hancock, G. S. and Anderson, R. S. (2000), River incision into bedrock: Mechanics and the relative efficacy of plucking, abrasion, and cavitation. *GSA Bulletin*.112: 490-503.
57. Anderson, R. S. and Ito, E. (2000), A vision for Geomorphology and Quaternary Science Beyond 2000. *GSA Today* 10, 14-16.
58. Ganguli, P., Mason, R. P., Abu-saba, K. E., Anderson, R. S. and Flegal, R. Mercury speciation in mine drainage from the New Idria Quicksilver Mine, California. *Environmental Science and Technology*.
59. MacGregor, K. R., Anderson, R. S., Anderson, S. P., and Waddington, E. D. (2000), Numerical simulations of glacial-valley longitudinal profile evolution. *Geology* 28: 1031.
60. Burbank, D. W. and Anderson, R. S. (2000) **Tectonic Geomorphology**. Blackwell Science, 274 pp.
61. Anderson, R. S. (2000), A model of ablation-dominated medial moraines and the generation of debris-mantled glacier snouts. *J. Glaciology* 46 (154): 459-469.

2001

62. Jaeger, J., B. Hallet, T. Pavlis, J. Sauber, D. Lawson, J. Milliman, R. Powell, S. P. Anderson and R. S. Anderson (2001), Orogenic and glacial research in pristine Alaska. *Eos* 82: 213-216.
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Zhang, H. et al., Pleistocene drainage reorganization driven by the isostatic response to deep incision into the northeastern Tibetan Plateau, EGU2014-4944

Anderson, L., M. Plummer, A. Wickert, W. Colgan, R.S. Anderson, 2014, Numerical modeling of the Last Glacial Maximum Yellowstone Ice Cap, Rocky Mountain Region GSA.

Armstrong, William H., Allen, Jeffery, Anderson, Leif S., Anderson, Robert S., and Rajaram, Harihar, 2014, Estimating glacier thickness from remotely sensed- and GPS-derived glacier velocities and ice dynamics modeling: A case study on the Kennicott Glacier, Alaska, USA, 44th Arctic Workshop.

Anderson, Leif S., Armstrong, William H., and Anderson, Robert S., 2014, The importance of ice face backwasting on the thinning of the debris-covered Kennicott Glacier terminus, Wrangell Mountains, Alaska, 44th Arctic Workshop.

Barnhart, Katherine R., Anderson, Robert S., and Overeem, Irina, 2014, The effect of changing sea ice on the vulnerability of Arctic coasts, 44th Arctic Workshop

Anderson, R.S., Glacial landscape evolution and its ^{10}Be legacy in rock and sediment, invited talk at 2nd Conference on use of Cosmogenic Nuclides in Arctic settings, Aarhus, Denmark, May 2014

Foster, M.A., R.S. Anderson, S.A. Mahan, Use of ^{10}Be to deduce variations in sediment supply from the Front Range to the High Plains, with implications for generation of fill and strath terraces, GSA Annual meeting 2014

Foster, M.A., R.S. Anderson, C.E. Wyshnytzky, W.B. Ouimet, D.P. Dethier, Hillslope lowering rates and mobile-regolith residence times from *in situ* and meteoric ^{10}Be analysis: Boulder Creek Critical Zone Observatory, Colorado, AGU Annual meeting 2014

Armstrong, W.H., R. S. Anderson, J. Allen, H. Rajaram, L. S. Anderson, Glacier basal sliding in two-dimensions quantified from correlation of high-resolution satellite imagery: A case study on Kennicott Glacier, Alaska, AGU Annual meeting 2014

Anderson, R.S., Edges and blocks matter on hillslopes, rivers, and glacial landscapes, AGU Annual meeting 2014

Brenner, A., Anderson, R.S., Anderson, S.P., Winchell, E., Schellhasse, D., and Marquez, J. Reconstructing Peak Discharge in a Colorado Front Range Headwater Stream During the September 2013 Storm, AGU Annual meeting 2014 virtual poster

Wickert, A.D., Mitrovica, J.X., and Anderson, R.S., Incision of the Mississippi River through the Laurentide Ice Sheet Forebulge, AGU Annual meeting 2014

Anderson, Scott, Anderson, S.P., and Anderson, R.S., Exhumation by debris flows in the 2013 Colorado Front Range storm, AGU Annual meeting 2014

Anderson, L.S., A. Wickert, W. Colgan, R.S. Anderson, Numerical modeling of the Last Glacial Maximum Yellowstone Ice Cap captures asymmetry in moraine ages, AGU Annual meeting 2014

Barnhart, K., and Anderson, R.S., Chilly Hilly – coupling models of landscape evolution and subsurface thermal processes, AGU Annual meeting 2014

Winchell, E., L. Lombardi, J. Marquez, D. Doak, R.S. Anderson, Gopher eskers, mounds and stonelines: Evidence of the annual to centennial impacts of gophers in the montane meadows of Colorado's Front Range, AGU Annual meeting 2014

Anderson, Scott, Anderson, S.P., and Anderson, R.S., Exhumation by debris flows in the 2013 Colorado Front Range storm, CZO All-hands meeting, Sept 2014

Anderson, R.S., Particle trajectories on hillslopes: Implications for particle age and ^{10}Be structure CZO All-hands meeting, Sept 2014

Winchell, E., Doak, D.F., Lombardi, L., and Anderson, R.S., The role of pocket gophers in montane landscapes, Front Range, Colorado, CZO All-hands meeting, Sept 2014

Foster, M. and R.S. Anderson, Strath terraces on the western High Plains indicate climatically-driven variations in sediment supply from source basins in the Colorado Front Range, CZO All-hands meeting, Sept 2014

2015 abstracts

Anderson, L.S. and R. S. Anderson, 2015, Numerical modeling of debris-covered glaciers: transient effects of debris on the length and dynamics of valley glaciers, IGS Annual meeting 2015

Anderson, S.P., Foster, M.A., Anderson, S.W., Dühnforth, M., and Anderson, R.S., 2015, Putting weathering into a landscape context: Variations in exhumation rates across the Colorado Front Range. Geophysical Research Abstracts 17, EGU2015-7992.

Hurst, M.D., D. H. Rood, M.A. Ellis, R. S. Anderson, 2015, Observations of historical sea cliff retreat rates exceed long-term estimates derived from cosmogenic ^{10}Be. Geophysical Research Abstracts 17, EGU2015-xxxx.

Anderson, S. P., M.A. Foster, R.S. Anderson, S.W. Anderson, 2015, Weathering, exhumation, and sediment production in granite steeplands, Goldschmidt conference abstract 2015

Hurst, M.D., D. H. Rood, M.A. Ellis, R. S. Anderson, 2015, Observations of historical sea cliff retreat rates exceed long-term estimates derived from cosmogenic ^{10}Be. GSA abstract.

Anderson, R.S., 2015, Standing back from the Transantarctic Mountains, Antarctic Science Workshop, Loveland Colorado, September 20-22, 2015 (invited talk)

Pendleton, S., G. Miller, K. Refsnider, and R. S. Anderson, 2015, Initial Insights into the Quaternary evolution of the Laurentide Ice Sheet on Southeastern Baffin Island, AGU abstract

Foster, M., R.S. Anderson, 2015, Absolute dating of strath terraces along the western High Plains reveals complicated history of occupation and incision, AGU Abstract

Anderson, R.S., 2015, Particle trajectories on hillslopes: Implications for particle age and ^{10}Be structure, AGU Abstract

Winchell, E., R.S. Anderson, D. Doak and E. Lombard, 2015, Exploring the landscape evolution of the subalpine meadow-forest system driven by the geomorphic work performed by the Northern Pocket Gopher, AGU Abstract

Glade, R., and R.S. Anderson, 2015, Honoring the reality of blocky hillslopes: Case study of a vertical dike at Shiprock, New Mexico, AGU Abstract

Zhang, H., P. Zhang, E. Kirby, J. Pitlick, R.S. Anderson, 2015, Characterizing the transient geomorphic response to base level fall in the northeastern Tibetan Plateau, AGU Abstract

Shobe, C., G. Tucker and R.S. Anderson, 2015, Big blocks and river incision: A numerical modeling perspective, AGU Abstract

2016 abstracts

Greenwood, W., Clark, M., Zekkos, D., Von Voigtlander, J., Bateman, J., Lowe, K., Hirose, M., Anderson, S.P., Anderson, R.S., Lynch, J., Assessment of rock mechanical properties and seismic stability in variably weathered layered basalts, Geophysical Research Abstracts, Vol. 18, EGU2016-11787, 2016

Anderson, L.S. and R.S. Anderson, The response of debris-covered glaciers to climate change: A numerical modeling approach. Geophysical Research Abstracts, Vol. 18, EGU2016-15611, 2016

Clark, M., S.P. Anderson, R. Anderson, D. Zekkos, Effects of weathering on the mechanical strength of layered basalts, GSA Annual meeting

Winchell, E., R.S. Anderson, Lombardi, E., D.F. Doak, J. Kaste, Gophers as geomorphic agents in the Colorado Front Range, GSA Annual meeting

Glade, R.C., R.S. Anderson and G.E. Tucker, Blocks control hillslope evolution in landscapes of layered rock, GSA Annual meeting

Foster, M.A. and R. S. Anderson, Using surficial deposits to constrain Quaternary fault movement in Colorado: insights from relative dating and cosmogenic radionuclide dating, GSA Annual meeting

Pendleton, S., S. Crump, J. Southon, G. Miller and R.S. Anderson, Constraining latest Holocene expansion and 20th century retreat of a small Canadian Artic icecap using entombed vegetation, GSA Annual meeting

Hurst, Martin D., Dylan H. Rood, Michael A. Ellis and Robert S. Anderson, Dating shore platforms and measuring long-term rates of coastal erosion on rocky coasts, MASTS Annual Science meeting

Stock, Greg M., Robert S. Anderson, and Thomas H. Painter, Retreat and stagnation of Little Ice Age glaciers in Yosemite National Park, AGU Annual Meeting

Pendleton, Simon L., Gifford H. Miller, Nathaniel Lifton, Robert S. Anderson, Exposure of Last Interglacial Landscapes, Baffin Island, Arctic Canada: Investigations and Implications, AGU Annual Meeting

Armstrong, William H., Robert S. Anderson, Mark Fahnestock, Allen Pope, Patterns of glacier basal motion across southcentral Alaska from cross-correlation of Landsat imagery, AGU Annual Meeting

Glade, Rachel C., and Robert S. Anderson, Hillslope evolution in landscapes dominated by layered rocks, AGU Annual Meeting

Marshall, Jill A., Robert S. Anderson, William E. Dietrich, Leonard S. Sklar, Todd E. Dawson, Quantifying the role of trees as Critical Zone architects employing crowbars, wedges and other tools of soil production, AGU Annual Meeting

Anderson, Robert S., Leif S. Anderson, Modeling the Rock Glacier Cycle, AGU Annual Meeting

Winchell, E., Robert S. Anderson, James Kaste, The vertical signature of gophers on the critical zone in the Colorado Front Range subalpine zone, AGU Annual Meeting

2017 abstracts

Zhang, H., P. Zhang, E. Kirby, J. Pitlick, R.S. Anderson, Characterizing The Transient Geomorphic Response To Base Level Fall In The Northeastern Tibetan Plateau, Asia Oceania Geological Society (AOGS2017), Singapore

Anderson, R.S., S.P. Anderson, H. Rajaram, D. deB. Richter, 2017, Weathering the hillscape: Water, rock, and soil on the move. CZO all-hands meeting, Washington DC, June 2017

Armstrong, W.H., R.S. Anderson, M. Fahnestock, A. Pope, 2017, Spatial Patterns Of Summer Speedup On South-Central Alaska Glaciers From Repeat Satellite Imagery, GSA Annual meeting

Stock, G.M., Anderson, R. S., Painter, T. H., Henn, B., Lundquist, J. D., 2017, Impending Loss Of Little Ice Age Glaciers In Yosemite National Park, GSA Annual meeting

Glade, R.C., D.J. Lanka, S.P. Anderson and R.S. Anderson, 2017, Legions of lobes: self-organization and movement of solifluction features at Niwot Ridge LTER, GSA Annual Meeting

Rossi, M.W., R.S. Anderson, S.P. Anderson, and G.E. Tucker, 2017, Geomorphic implications of the orographic transition from snowmelt to rainfall triggered extreme events in the Colorado Front Range, GSA Annual Meeting

Anderson, S.P., F. K. Rengers, M. A. Foster, E. W. Winchell, and R. S. Anderson, 2017, Rainfall influence on styles of mass movement, GSA Annual Meeting

Rush, M., Rajaram, H., R.S. Anderson, S.P. Anderson, 2017, Aspect controls the formation of seasonally frozen ground on montane hillslopes: results from a modeling study in the Colorado Front Range, AGU Annual Meeting

Glade, R.C., R.S. Anderson, 2017, Steady evolution of hillslopes in layered landscapes: self-organization of a numerical hogback, AGU Annual Meeting

Marshall, J.A., R.S. Anderson, T.E. D, W.E. Dietrich and JTM, 2017, Hoodwinked by tree throw? Wind, water, rock and the mechanics of tree-driven bedrock physical weathering, AGU Annual Meeting

Hurst, A.A., R.S. Anderson and G. Tucker, 2017, Calculating the spatio-temporal variability of bedrock exposure on seasonal hydrograph timescales as a prerequisite to modeling bedrock river evolution, AGU Annual Meeting

Barnhart, K., J. Kay, I. Overeem, and R.S. Anderson, 2017, Influence of sea ice on Arctic coasts, AGU Annual Meeting (Invited abstract)

Kochanski, K., C. Bertholet, R. S. Anderson, G. Tucker, 2017, The self-organization of snow surfaces and the growth of sastrugi, AGU Annual Meeting

Anderson, R.S., H. Rajaram, and S.P. Anderson, 2017, Effects of climate on co-evolution of weathering profiles and hillscapes, AGU Annual Meeting

Anderson, S.P., F.K. Rengers, M.A. Foster, E. Winchell, and R.S. Anderson, 2017, Rainfall influence on styles of mass movement, AGU Annual Meeting

2018 abstracts

Dühnforth, M, and R. S. Anderson, 2018, Constraining the timing of the last glacial-interglacial transition in the Wind River Range, Wyoming, using cosmogenic ^{10}Be exposure dating. EGU

Glade, R.C. and C. Shobe, 2018,Modeling the 2-D evolution of blocky landscapes: Coupled model design. CSDMS Annual meeting, Boulder Colorado.

Shobe, C. and R.C. Glade, 2018, Modeling the 2-D evolution of blocky landscapes: Hillslope-channel interactions. CSDMS Annual meeting, Boulder Colorado.

Greenwood, W., Zekkos, D., Clark, M., Cowell, K., Anderson, S.P., and Anderson R.S., Seismic Slope Stability and Characterization of a Basaltic Cliff at Kauhola Point on the Island of Hawaii, 7ICEGE meeting

Anderson, R.S., 2018, Reflections on the Legacy of Grove Karl Gilbert, 1843-1918: Harnessing the natural experiments of the American West in the service of science, AGU Annual Meeting, Washington D.C.

Rossi, M., Tucker, G., Anderson, R.S. and Anderson, S.P., 2018, Runoff and erosion thresholds dictated by the balance between stochastic rainfall statistics and Critical Zone architecture, AGU Annual Meeting, Washington D.C.

Hurst, A., Anderson, R.S., and Crimaldi, J., 2018, River channel lowering by upstream migration of bedrock steps, AGU Annual Meeting, Washington D.C.

Glade, R.C. and Anderson, R.S., 2018, From scallops to flatirons: planview patterns in layered landscapes, AGU Annual Meeting, Washington D.C.

Shobe, C.M., R.C. Glade, G.E. Tucker, and R.S. Anderson, 2018, Chaotic chasms: canyon evolution governed by autogenic channel-hillslope feedbacks, AGU Annual Meeting, Washington D.C.

2019 abstracts

Glade, R.C., Shobe, C.M., G.E. Tucker, and R.S. Anderson, How do channel-hillslope feedbacks modulate river canyon evolution? AGU Annual Meeting, S.F.

Shobe, C.M., R.C. Glade, G.E. Tucker, and R.S. Anderson How do channel-hillslope feedbacks modulate river canyon evolution? AGU Annual Meeting, S.F.

Hurst, A., Anderson, R.S., and Crimaldi, J., River channel lowering by upstream migration of bedrock steps, AGU Annual Meeting, S.F.

Pendleton, S., G. Miller, N. Lifton, S. Lehman, J. Southon, S. Crump, R.S. Anderson, Just how unprecedented is modern warming in the Arctic? AGU Annual Meeting, S.F.

Sarah E. Crump, Nicolás E. Young, Simon L. Pendleton, Gifford H. Miller, Robert S. Anderson, Jason P. Briner , Expansion of Baffin Island glaciers during early Holocene cold reversals, GSA Annual Meeting

Anderson, Robert S., Egholm, David L., Knudsen, Mads F. and Jansen, John D., Northern Hemisphere Ice Sheet Flowline Models As Probes Of Long-Term Ice Sheet Evolution, GSA Annual Meeting

2020 abstracts

Jansen, J., M. Sandiford, T. Fujioka, T.J. Cohen, M. Struck, S.P. Anderson, R.S., D. Egholm, 2020 Geomorphic imprint of dynamic topography and intraplate tectonism in central Australia, EGU 2020

Aaron A. Hurst, Robert S. Anderson, John P. Crimaldi, 2020, Toward Entrainment Thresholds in Fluvial Plucking, AGU annual meeting

Pendleton, S., G. Miller, Nathaniel Lifton, Nicolás Young, Scott Lehman, Robert Anderson, John Southon, 2020, Deciphering glacier activity on Baffin Island during deglaciation with radiocarbon archives, GSA Annual meeting

Matthew W. Rossi, Gregory E. Tucker, Suzanne P. Anderson, Robert S. Anderson, 2020, Simulating thin and patchy soils using an Agent-Based Model of forest dynamics, root growth, and soil production. AGU annual meeting

Ferrell, C. L., S. A. Stern, R.S. Anderson, T. Bertrand, K. N. Singer, L. A. Young, R. Hoover, and the New Horizons Team, 2020, Characterization & Analysis of Dune Fields on Sputnik Planitia, DPS meeting

2021 abstracts

Cam Wobus et al. Explaining the "hole" in the Colorado high plains, Geological Society of America Abstracts with Programs, https://doi.org/10.1130/abs/2021AM-364728.

Rossi, Matthew W., Tucker, G.E., Anderson, R.S., Anderson, S.P., and McGlinchy, J., Elevation- and aspect-dependent emergence of bedrock tors in the Rampart Range, CO, Geological Society of America Abstracts with Programs, https://doi.org/10.1130/abs/2021AM-369423.

Anderson, R.S., Anderson, S.P., Tucker, G., and Rossi, Matt. Correspondence between Colorado Front Range batholiths and "erosion surfaces", Geological Society of America Abstracts with Programs, v. 50, no. 5,

Stock, G.M., Avdievitch, N.N., Painter, T., Bormann, K., Anderson, R.S., Basagic, H., and Fountain, A. Reconstructing historical volume loss of Little Ice Age glaciers in Yosemite National Park: Geological Society of America Abstracts with Programs, https://doi.org/10.1130/abs/2021AM-366772.

Hurst, A.A., RS Anderson, G.E. Tucker, 2021, Variability in plucking thresholds governs knick zone formation, shape and rate of migration, AGU Annual Meeting

Rossi, M.W., Tucker, G.E., Anderson, R.S., Anderson, S.P., and McGlinchy, J., 2021, Driving hillslope evolution models using an Agent-Based Model of forest dynamics and soil production, AGU annual meeting

Lehmann, B., R.S. Anderson, Xavier Bodin, Diego Cusicanqui, Pierre G. Valla, and Julien Carcaillet, 2021, Reconstruction of the dynamics of rock glaciers in Alpine environment, from modern to Holocene timescales

2022 abstracts

William H. Armstrong, David Polashenski, Martin Truffer Gwenn Flowers and Robert S. Anderson, 2022, The importance of evolving basal motion for long-term projections of glacier change. AGU Annual Meeting.

Josie Arcuri, Irina Overeem, Marisa Repasch, Suzanne Anderson, Robert S. Anderson, Joshua Koch, 2022. Permafrost river banks shaped by thaw-dependent fluvial erosion. AGU Annual Meeting.

Suzanne P Anderson, Marisa Nicole Repasch, Irina Overeem, Josie Arcuri, Robert S Anderson, and Joshua Koch, 2022. Icy Riverine Landscapes: Mobilization and Fate of Carbon-rich Sediment in a Periglacial Braided River Corridor, AGU Annual Meeting.

Simon Pendleton, Robert Anderson, Matt Rossi, Benjamin Lehmann, Robert Andrus, 2022. Late Pleistocene retreat and regrowth of glaciers in the Rawah Wilderness, Northern Colorado, AGU Annual Meeting

Marisa Repasch, Irina Overeem, Suzanne Anderson, Robert S. Anderson, Josephine Arcuri, Joshua Koch, 2022. River ice, thunderstorms, and bank erosion: hydrogeomorphic controls on organic carbon storage and transport in Arctic rivers, AGU Annual Meeting

Lehmann, B., R.S. Anderson, Xavier Bodin, Diego Cusicanqui, Pierre G. Valla, and Julien Carcaillet, 2022, Reconstruction of the dynamics of rock glaciers in Alpine environment, from modern to Holocene timescales, EGU Annual Meeting

2023 abstracts

Armstrong, W.H., R.S. Anderson, G. Flowers, D. Polashenski, and M. Truffer, 2023, Modeling the role of evolving basal motion in modulating glacier mass loss in a changing climate. AGU Annual Meeting. (title of same similar name from 2022 as that talk was withdrawn due to COVID)

Monahan, J., Anderson, R.S. and Y. Zhang, Spalling of rock walls associated with fires and its imprint in long term evolution of wall geometry, AGU Annual meeting

Overeem, I. J. Arcuri, M. Repasch, S. Anderson, R.S. Anderson, R. Vachon, F. Urban, C. Cochran and J. Koch. Thermal state controls coupling between water discharge and sediment transport in Arctic rivers, AGU Annual Meeting

Anderson, R.S., B. Lehmann, D. Cusicanqui, M. Rossi, Climatic drivers of rock glacier dynamics: Sopris Rock Glacier, CO, USA, AGU Annual Meeting

Pendleton, S., G. Miller, N. Lifton, S. Lehman, J. Southon, Sarah Crump, R.S. Anderson, 2023 Kirk Bryan Award: The Importance of Following the Unexpected: Paleoclimate Insights from Icey Baffin Island Tombs

2024 abstracts

Lehmann, B., R.S. Anderson, D. Cusicanqui, and P.G. Valla, 2024. Advancing Understanding of Holocene Rock Glacier Dynamics. EGU 2024 Annual Meeting (invited talk)

Naomi E. Ochwat, Ted A. Scambos, Robert S. Anderson, Catherine C. Walker, Bailey L. Fluegel, 2024. Re-evaluating Rapid Glacier Retreats: Hektoria Glacier's Unprecedented Tidewater Collapse. EGU 2024 Annual Meeting

Repasch, M., S.P. Anderson, R.S. Anderson, J.C. Koch, J. Arcui, and I. Overeem, 2024. Accelerated rates of oxidative weathering in the Arctic driven by permafrost thaw, EGU 2024 Annual Meeting

Ochwat, N. E., T. A. Scambos, R. S. Anderson, C. C. Walker, B. L. Fluegel, 2024. Re-evaluating Rapid Glacier Retreats: Hektoria Glacier's Unprecedented Tidewater Collapse. EGU 2024 Annual Meeting

Arcuri, J., Overeem, I., Repasch, M., Anderson, S.P., Anderson, R.S., Koch, J., Urban, F., and Cochran, C., 2024. River ice directs permafrost thaw across an arctic delta: Field observations and modeling insights from the Canning River delta in arctic Alaska, 2024 GSA Annual Meeting, Anaheim, CA

Anderson, R. S. 2024. Musings on eolian processes: From barchan headlights to solid rocket boosters as wind tunnels. AGU Fall 2024 meeting Washington DC

Anderson, S.P., C. Cochran, R.S. Anderson, I. Overeem, M. Repasch, J. Arcuri, 2024. Carbon storage dynamics in an icy riverine corridor. AGU Fall 2024 meeting Washington DC

Ruef, J., R. S. Anderson 2024. Modeling the thermal dynamics of rock glaciers, AGU Fall 2024 meeting Washington DC.

Monahan, J., R. S. Anderson, and Y. Zhang. 2024. Pore pressure as a driver of spalling scale, AGU Fall 2024 meeting Washington DC

Repasch M., S. P. Anderson, J. C. Koch, J. Arcuri, R. S. Anderson, and I. Overeem, 2024. High rates of oxidative weathering in the Arctic driven by permafrost thaw, AGU Fall 2024 meeting Washington DC

Pendleton, S., R. S. Anderson, M. W. Rossi, B. Lehmann, R. Andrus, 2024, Constraining the glacier to rock glacier transition in the northern Colorado Rockies. AGU Fall 2024 meeting, Washington DC

Anderson, S.P., C. Cochran, R.S. Anderson, M. Respasch, J. Arcuri, I. Overeem, J. Koch, 2024, A carbon budget for an icy riverine landscape, International Conference on Permafrost 2024.

Respasch, M., J. Arcuri, I. Overeem Anderson, S.P., R.S. Anderson, J. Koch, 2024, Impacts of a convective storm on runoff, erosion, and carbon export in a continuous permafrost landscape, International Conference on Permafrost 2024.

2025 Abstracts

Numerical models of rock glacier dynamics over the Holocene (2025-02-14). EGU abstract. doi: 10.5281/zenodo.14591935

Surface kinematics of the Thomas Lake rock glacier using image correlation (2025-02-14). EGU Abstract. doi: 10.5281/zenodo.14591902

Stern, A.S., and Kelsi S. Singer, Orkan Umurhan, Gary Clow, Alan Howard, Robert S. Anderson, Evidence for Possible N_2 Basal Flow Beneath Pluto's Northern Sputnik Planitia, LPI meeting

Toor, M., Z. Shwartz, J. Li, M. McDonough, J. Ruef, B. Markle, R.S. Anderson, and S.P. Anderson, 2025, Regional variations in nitrate content of rock glacier outflow, Colorado Rockies. Regional GSA Annual Meeting Provo Utah.

Repasch, M., Suzanne P. Anderson, Irina Overeem, Joshua C. Koch, Josie Arcuri, Robert S. Anderson, and Preston Kemeny, Linking permafrost thaw to enhanced rock organic carbon oxidation in Arctic mountain landscapes. IGC, International Conference on Geomorphology

Ruef, J., R.S. Anderson, B.R. Markle, S.P. Anderson, Modeling the Climate Thresholds of Rock Glacier Health, ICG Abstract

Anderson, S.P., Robert S Anderson, Cole Cochran, Marisa Repasch, Irina Overeem, and Josie Arcuri, Toward a carbon budget in the Arctic Canning River delta, ICG Abstract

Anderson, R.S., Suzanne P. Anderson, Juliana Ruef, Brad Markle, Maya McDonough, Lingering beneath crumbing walls: the necessary conditions for rock glaciers, ICG abstract

Research grant activity

Total activity since arrival at CU summer 2003: 40 proposals submitted to NSF, 1 to NEHRP, 1 to ONR, 1 to PRF, 1 to Yosemite Fund, 1 to McDonnell Foundation, 2 to College Scholar program, and 2 to CRCW Awards
All submittals; ***Awards in bold***

RIO seed grant proposal with Yida Zhang, submitted Jan 15, 2025:
"Can wildfire drive the shape evolution of bedrock domes?" $59,922
Submitted January 2025; Declined April 2025

National Geographic, Level II grant
"Fire causes sideways erosion of iconic Australian bedrock domes"
$56,458
PI: Robert S. Anderson
Submitted April 2024
declined

National Science Foundation /EAR/GLD
Rock glaciers as probes of Holocene climate, weathering, hydrology and landscape evolution
Lead PI: Robert Anderson
co-PI: Suzanne Anderson
$769,239
June 2024 - May 2027
R.S. Anderson time commitment: 1.0 summer month
submitted January 2024
funded in full July 15 2024

National Science Foundation S-STEM
Sustaining Student Success: Creating a Geoscience Learning Community from High School to Community College to Baccalaureate
PIs: Lon Abbott, Jen Stempien, Robert Anderson, Elanor Camann (Redrock CC), Lorene Grace (Redrock CC)
University of Colorado Boulder
$1.5M
Person-month per year committed to Project: 0.2
submitted April 22, 2021
declined

European Checkoslovakian Science Agency
Timing and Dynamics of the First Great Eurasian Ice Sheets
PIs: John Jansen (Prague), Mangold, Egholm, Knudsen, R.S. Anderson
International collaboration, University of Czechoslovakia, Prague
Submitted May 2021
No salary
granted

National Science Foundation S-STEM
Building a Collaborative, Multi-mentor Research Community Among High School, Community College, and University Geoscience Students
PIs: Lon Abbott, Jen Stempien, Robert Anderson, Elanor Camann (Redrock CC), Lorene Grace (Redrock CC)
University of Colorado Boulder
$1,436k
submitted April 2020
Person-month per year committed to Project: 0.2
submitted April 22, 2020
declined

European Checkoslovakian Science Agency
Timing and Dynamics of the First Great Eurasian Ice Sheets
PIs: John Jansen (Prague), Mangold, Egholm, Knudsen, R.S. Anderson
International collaboration, University of Czechoslovakia, Prague
Submitted May 4, 2020
No salary
declined

Florissant National Monument
Assess Pleistocene Geomorphology and Stratigraphy for Resource Management Planning
PI: Robert S. Anderson
CESU Agreement
$17k
Total Award Period Covered: June 2020-May 2022
Location of the Project: University of Colorado
Person-month per year committed to Project: 0.0

National Science Foundation, Arctic Natural Sciences
Icy landscapes from the Brooks Range to the Beaufort Sea: quantifying the mobilization, transport and deposition of sediment and carbon in Arctic Alaska
PI: Irina Overeem
Co-PIs: Robert S. Anderson, Suzanne P. Anderson, Marisa Repasch
Total Award Request: $1,306,498
Total Award Period Covered: 6/1/20-5/31/22
Location of the Project: University of Colorado
Person-month per year committed to Project: 1.0

NSF/EAR/GLD
Wearing back and wearing down: Understanding rock glacier dynamics to constrain lateral cliff erosion and rock weathering
Lead PI: Robert Anderson
co-PI: Suzanne Anderson
$560,106
January 2020 - December 2022
R.S. Anderson time commitment: 1.0 summer month
declined

National Geographic
“Deducing How Fast the Grand Canyon was Carved”
PIs Lon Abbott, Bo Li, Tim Cohen, Robert Anderson
University of Colorado Boulder
$30k
Submitted April 2019
declined

NSF S-STEM
“Expanding a Collaborative, Inquiry-based Research Community (CIRC) to Improve STEM Persistence Among 4-year and 2-year College Students”
PIs Lon Abbott, Jen Stempien, Robert Anderson
University of Colorado Boulder
$1,149k
submitted March 2019
declined July 2019

CU-RIO Seed fund proposal
“Process-based models of steep river channel evolution by migrating bedrock steps”
with Dr. John Crimaldi, CEAE, to support graduate student Aaron Hurst
$50,000
submitted January 2019
declined March 2019

NSF/EAR/GLD
“Rock and ice: Rock glacier dynamics over annual to millennial timescales”
PI: Robert Anderson
U. of Colorado Boulder
$492k
submitted July 2018
declined December 2018

NSF/EAR/OPP
“Icy landscapes from the Brooks Range to the Beaufort Sea: Quantifying the mobilization, transport and deposition of sediment and carbon in Arctic Alaska”
PIs: Irina Overeem, Suzanne Anderson, Robert Anderson
U. of Colorado Boulder
$910k
submitted May 2018
declined April 2019

NSF/EAR/GLD
“Topographic response to the transition from snowmelt- to rainfall-triggered extremes”
PIs: Matt Rossi, Greg Tucker, Suzanne Anderson, Robert Anderson
U. of Colorado Boulder
$310k

submitted December 2017
awarded May 2018

NASA
"Are our mountains thawing? Mapping the extent of alpine permafrost"
PI: Kristy Tiampo (CIRES/Geological Sciences), Robert Anderson, and 3 others
U. of Colorado Boulder
submitted July 2017
declined January 2018

NSF/EAR/GLD
"Rock and ice: Rock glacier dynamics over annual to millennial timescales"
PI: Robert Anderson
U. of Colorado Boulder
submitted February 2017
declined May 2017

CU outreach award
"Climate change in the backyard" with colleagues at Fiske Auditorium
$23k
Awarded July 2016

NSF-NERC proposal. "NSFGEO-NERC: Quantifying rates of rocky coast evolution during the Holocene using combined cosmogenic radionuclide analysis and numerical modeling", collaborative with BGS Ellis and Hurst,
submitted July 2015.
declined

NSF/EAR/GLD
"Muav Gorge Grand Canyon" (resubmission)
PI: Lon Abbott, R.S. Anderson, R. Flowers, G. Tucker at CU; S. Martel at U Hawaii
U of Colorado Boulder
$670k
submitted July 16, 2015
declined December 2015

NSF/EAR/GLD
"Blocky hillslopes: from outcrops to flatirons"
PI: R.S. Anderson
U of Colorado Boulder
$320,000
submitted January 16, 2015
awarded

NSF/EAR/GLD
"Muav Gorge Grand Canyon"

PI: Lon Abbott, R.S. Anderson, R. Flowers, G. Tucker at CU; S. Martel at U Hawaii
U of Colorado Boulder
$670k
submitted July 16, 2014
declined

NEHRP
Evaluation of weathering on rock strength and slope- stability during large earthquakes: Collaborative Research with University of Michigan, and University of Colorado Boulder (PI: Marin Clark, U. Michigan; RSA and SPA at CU)
$28,492
Submitted May 2014
awarded

NSF/EAR/GLD: RAPID
"Effects of an extreme rainstorm in the Colorado Front Range"
(PI: Suzanne Anderson, Co-PIs: Greg Tucker, Robert Anderson)
$48,443
submitted November 25, 2013
awarded

NSF/EAR/GLD
"Alpine ridge, cliff and talus dynamics"
PI: R.S. Anderson
U of Colorado Boulder
$467,000
submitted July 16, 2013
declined

NSF/EAR Surface Processes Section
"Boulder Creek Critical Zone Observatory II"
(lead PI Suzanne Anderson; other co-PIs: Hari Rajaram, Greg Tucker, Noah Fierer)
$5,000,000
awarded

NSF/BIO
"Collaborative research: Geomorphic control of lowland tropical forest nitrogen cycle"
(PI RS Anderson, collaborative with Alan Townsend, Stephen Porder and Cory Cleveland)
U of Colorado Boulder
$756,114
submitted September 17, 2012
awarded

NSF/EAR/GLD
"Edges matter: the importance of edges and blocks in the evolution of landscapes"
U of Colorado Boulder

$297,000
submitted July 16, 2012
declined

NSF/EAR Surface Processes Section
"Boulder Creek Critical Zone Observatory: 1 year extension"
(lead PI Suzanne Anderson; other co-PIs: Anne Sheehan, Greg Tucker, Noah Fierer)
$1,000,000
submitted March 2012
awarded

NSF-IGERT
"Interdisciplinary Modeling and Analysis for the Anthropocene"
(involved as senior personnel) PI: James P. Syvitski, Co-PIs: Bengt Fornberg, John Hauser, Elizabeth R. Jessup, Gregory E. Tucker.
$3,379,297.
7/1/13-6/30/18. (60 months)
declined

NSF/EAR/CD
Collaborative Research: "The rise and topographic evolution of the Rockies and High Plains: Cryptic orogeny or 'anorogenic' uplift?" lead PI: Craig Jones, CU; 6 other co-Is
U of Colorado Boulder
submitted November 18, 2011
$3M
declined

NSF/EAR/OPP
"Interpretation of Arctic North Slope permafrost borehole thermal evolution in light of spatial and temporal variation in surface temperature fields"
U of Colorado Boulder
submitted October 18, 2011
$94,000
funded August 2012

NSF/EAR/OPP
"From Lake to Bay: The eventual demise of Lake Teshekpuk on the North Slope of Alaska"
co-PI with Irina Overeem, INSTAAR, and Cameron Wobus, Stratus Consulting
$583,420
U of Colorado Boulder
submitted November 10, 2010
declined

NSF/EAR/CD
Collaborative Research: "The rise and topographic evolution of the Rockies and High Plains: Cryptic orogeny or 'anorogenic' uplift?" lead PI: Craig Jones, CU; 6 other co-Is

$4,000,000
U of Colorado Boulder
submitted November 15, 2010
declined

University of Colorado College of Arts and Sciences Scholar Award
"The importance of edges"
November 2010

NSF/EAR/GLD
"Collaborative Research: Untangling the climatic and non-climatic controls on glaciers in two western US mountain ranges"
co-PI with Miriam Duhnforth, INSTAAR, and Jason Briner, University of Buffalo
$450,064
submitted July 16, 2010
declined

NSF/EAR/GLD
"Linking glacier sliding and hydrology: exploiting unique natural experiments on the Kennicott Glacier" co-PI with Hari Rajaram, CU Engineering
$410,000
submitted January 19, 2010
funded

NSF/EAR/CD
Collaborative Research: "The rise and topographic evolution of the Rockies and High Plains: Cryptic orogeny or 'anorogenic' uplift?" lead PI: Craig Jones, CU; 6 other co-Is
U of Colorado Boulder
submitted 09/09
$2,122,327
declined

James S. McDonnell Foundation
Unraveling the Complexity of Glacier Sliding
$446,190
submitted March 20, 2009
declined

NSF/EAR/GLD
"**Dependence of alpine glacial erosion on lithology in the Sierra Nevada, California, and the Wind River Range, Wyoming"**
U of Colorado Boulder
Funded, NSF/EAR 0922126
01/09
$265,801

NSF/EAR/CD
"Collaborative Research: "Coupled physical and chemical evolution of the Earth's surface in response to ice sheet growth and decay". lead PI: Peter Koons, U. Maine; 6 other co-Is
U of Colorado Boulder
Declined
08/08
$639,795

Yosemite Fund
"Monitoring the McClure and Lyell Glaciers, Yosemite National Park"
(submitted with Greg Stock, Yosemite NP Geologist)
awarded, to take affect Jan 1st 2009 (subcontract through Yosemite National Park)
$77,000

NSF/EAR/P2C2 (Perspectives in Paleoclimate)
"Glaciation of the Sawatch Range, Colorado: a new strategy for extraction of paleoclimate information from the crown of the Rockies"
U of Colorado Boulder
02/08
Declined

NSF/DGE
"IGERT: Integrated Graduate Research and Training in Cold Regions" (full proposal)
U of Colorado Boulder (with 2 other PIs (Jim White and Alan Townsend) and 6 other co-Is)
02/07/2008
Declined

NSF/DGE
"IGERT: Integrated Graduate Research and Training in Cold Regions" (pre-proposal)
U of Colorado Boulder (with 2 other PIs (Jim White and Alan Townsend) and 6 other co-Is)
02/07/2007
Invited for full proposal

NSF/EAR Surface Processes Section
"Boulder Creek Critical Zone Observatory: Weathered Profile Development in a Rocky Environment and Its Influence on Watershed Hydrology and Biogeochemistry"
(lead PI Suzanne Anderson; other co-PIs: Anne Sheehan, Greg Tucker, Noah Fierer)
2/1/2007
$4,245,213
Awarded

NSF/EAR/Geomorphology and land use dynamics
"Collaborative research: Probing the role of rock type in the evolution of glacial landscapes"
(with David Shuster, Berkeley Geochronology Lab)
$208,537

01/17/2007
Awarded

NSF/EAR/Geophysics
"Collaborative Research: Rock fracture and erosion rates in tectonic environments: geophysical and cosmogenic measurements" (co-PI with Peter Molnar, CU, and Steve Park, UC Riverside)
$118,998
12/1/2006
Declined

Office of Naval Research (ONR), National Oceanographic Partnership Program, NOPP
"Toward a predictive model of Arctic coastal retreat in a warming climate, Beaufort Sea, Alaska" (co-PI with Cameron Wobus and Irina Overeem, CU Boulder)
$386,939
12/1/2006
Awarded

Petroleum Research Fund of the American Chemical Society (PRF/ACS)
Multiple probes of glacial landscape evolution in a granitic massif, Kichatna Mountains, Alaska
$256,897
6/2006
Declined

NSF/DGE
"IGERT: Integrated Graduate Research and Training in Landscape Dynamics" (pre-proposal)
U of Colorado Boulder (with 3 other PIs and 6 other co-Is)
02/07/2006
Not Invited

NSF/EAR 0617435
"Controls on Rapid Coastline Retreat in a Warming Arctic"
U of Colorado Boulder (co-PI with Cameron Wobus and Greg Tucker)
$282,073.00
01/17/2006
Declined

NSF/EAR 0617214
"Collaborative Research: Testing Feedbacks between Fjord Evolution and Ice Sheet Dynamics"
U of Colorado Boulder (with Jason Briner, SUNY Buffalo)
$167,591
01/17/2006
Declined

NSF/EAR 0607831
"Collaborative Research: Lithospheric removal: The Sierra Nevada as the prototype of a fundamental process in mountain building"

U of Colorado Boulder (Craig Jones lead PI from CU Boulder)
$757,108.00
2/2006 -3/2011
Awarded

NSF/EAR 0549566
"SGER: Glacial Response to an Outburst Flood, Kennicott Glacier, Alaska"
U of Colorado Boulder (with co-PI Suzanne Anderson)
$34,630
1/1/2006 – 12/31/2006
Awarded

NSF/EAR 0545537
"Evolution of Plateaus in Western North America: The Roan Plateau Example"
U of Colorado Boulder
$254,806
07/18/2005
Awarded

NSF/EAR 0545531
"Chemical and Physical Erosion of Steep Terrain with High Rainfall and Low Tectonic Activity: Western Ghats (Sahyadri), India"
U of Colorado Boulder (with co-PIs Suzanne Anderson and Peter Molnar)
$475,872
07/18/2005
Declined

NSF/DGE 0523964
"IGERT: Integrated Graduate Research and Training in Landscape Dynamics" (preproposal)
U of Colorado Boulder (with 3 other PIs)
02/07/2005
Not Invited

NSF/EAR 0519102
"Collaborative Research: Constraints on landscape evolution in the fjorded margin of the northeastern Laurentide Ice Sheet"
U of Colorado Boulder (with Jason Briner, SUNY Buffalo)
01/18/2005
$257,091.00
Declined

NSF/EAR 0519060
The Linkage of Chemical and Mechanical Processes in the Evolution of High Surfaces of the Front Range Crest, Colorado
U of Colorado Boulder (with co-PI Suzanne Anderson)
$201,689

9/1/2005 – 8/30/2007
Awarded

NSF/EAR 0514526
"Caves As Recorders of River Incision, Tectonics, and Landscape Evolution In the Sierra Nevada California" (no cost extension from UCSC grant)
U of Colorado Boulder
12/28/2004
$47,290
Awarded

NSF/EAR 0507790
"Collaborative Research: Tails of Two Drips: Removal of Mantle Lithosphere from Beneath the Sierra Nevada"
U of Colorado Boulder (Craig Jones lead PI from CU Boulder)
$653,570.00
04/29/2005
Declined

NSF/EAR 0446822
"Linking Ice Dynamics and Subglacial Hydrology on a Large, Temperate Alaskan Glacier"
U of Colorado Boulder (with co-PI Suzanne Anderson)
$391,926.00
07/15/2004
Declined

CU CRCW seed proposal

Dating sediments using cosmogenic radionuclides

$7000

March 2004

Awarded

NSF/EAR 0418952
"The Linkage of Chemical and Mechanical Processes in the Evolution of High Surfaces on the Front Range Crest, Colorado"
U of Colorado Boulder (with co-PI Suzanne Anderson)
$494,159.00
01/16/2004
Declined

NSF/EAR 0414292
"Incision and Erosion of the Kumaon Himalaya"
U of Colorado Boulder ((with co-PI Peter Molnar)
$325,700.00

01/07/2004
Declined

NSF/EAR 0408997
"Collaborative Research: Growth of the Northeast Margin of the Tibetan Plateau Integrating Structural, Stratigraphic and Geomorphic Approaches"
U of Colorado Boulder (with co-PI Paul Heller, UWyoming)
$198,807.00
12/01/2003
Declined

Rocky Mountain National Park
"Simulating glacial occupation of the Front Range: taking the geomorphology of the Park to the visitor in movie form."
$53,176
November 2003
Declined

CU CRCW Grant-in-aid
"Sliding of Kennicott Glacier, Alaska."
$7000
December 2003
Declined

NSF/EAR 0346228
"Collaborative Research: Tails of Two Drips: Removal of Mantle Lithosphere from Beneath the Sierra Nevada"
U of Colorado Boulder (Craig Jones lead PI from CU)
$1,037,427.00
07/16/2003
Declined