

Curriculum Vitae, Dennis L. Newell

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Education

PhD (Distinction)	University of New Mexico, Earth & Planetary Sci.	2007
MS	Colorado State University, Geology	1997
BS (Honors)	New Mexico Inst. Mining & Technology, Geology	1992

Professional Appointments

2019 –	<i>Associate Professor</i> , Utah State University, Logan UT
2013 – 2019	<i>Assistant Professor</i> , Utah State University, Logan, UT
2009 – 2012	<i>Scientist II</i> , Los Alamos National Laboratory, Los Alamos, NM
2008 – 2009	<i>Visiting Professor of Geology</i> , Western State College of Colorado, Gunnison, CO
2007 – 2008	<i>Postdoctoral Associate</i> , Los Alamos National Laboratory, Los Alamos, NM
2000 – 2004	<i>Principal Geologist</i> , Apogen Technologies, Inc., Los Alamos, NM
1998 – 2000	<i>Technical Staff Member</i> , Los Alamos National Laboratory, Los Alamos, NM
1997 – 1998	<i>Graduate Research Assistant</i> , Los Alamos National Laboratory, Los Alamos, NM
1994 – 1995	<i>Project Geologist</i> , Environmental Resources Management, Los Alamos, NM
1993 – 1994	<i>Graduate Research Assistant</i> , Los Alamos National Laboratory, Los Alamos, NM

Research Grants & Awards

Utah State University

2023 - 2024	NSF-EAR-2335077 Tectonics: Collaborative Research: RAPID: Fault rock and spring sampling of the 2023 Kahramanmaras, Turkey, earthquake sequence ruptures (PI Ault, Co-PI Newell USU; Co-PI Akciz CSU Fullerton): \$23,982
2022 – 2023	USU Extension Water Initiative Grants Program - Hydrochemical Tracer Sampling in Logan River to Inform Future Water Availability. (PI Neilson, Co-I's Newell, Rivers, USU; Co-I Brooks, U of U): \$39,795.
2021 – 2024	NSF-EAR-204336 Hydrologic Sciences: Collaborative Research – Quantifying groundwater sustainability in an arid Mountainous Karst area using a hybrid of physically-based and data-driven models (PI Xu, ASU; Co-PI Neilson & Newell, USU): \$712,023
2020 – 2023	NSF-EAR-1937347 Tectonics: Collaborative Research – Quantifying crustal hydration effects in the Colorado Plateau from xenoliths (PI Mahan, CU Boulder; Co-PI Newell, USU): \$452,119

- 2020 – 2022 NSF-EAR-2016338 Tectonics: EAGER – Collaborative Research - Mantle fluid contribution to springs along the Denali Fault System: Constraints on the crustal scale nature of the main strand and splays (PI Newell, USU; Co-PI Regan, UA Fairbanks): \$99,885
- 2017 – 2019 Department of Energy (DOE) Energy Efficiency & Renewable Energy (EERE): Geothermal Play Fairway Analysis - Snake River Plain: Phase 3 (PI Shervais; Co-I's Newell & Evans): \$1M
- 2017 – 2018 USU Research Catalyst grant: Great Salt Lake Microbialite Chronology and Isotope Geochemistry: Implications for Paleolake Hydrological and Geochemical Evolution: (PI Newell): \$20,000
- 2017 – 2018 USU Research Catalyst grant: Using cosmogenic elements as geochronological markers in lake sediments and incorporating instantaneous sedimentation rates into Holocene age-models, (PI Brahney, Watershed Sciences; Co-I Newell,): \$20,000.
- 2016 – 2022 NSF-EAR-1623034 Tectonics & Petrology and Geochemistry: Collaborative Research: Mantle to crust fluid transfer in an active flat-slab subduction zone - insights from Peruvian thermal spring geochemistry, (PI Newell, USU; Co-PI Jessup, UTK): \$438,391 + \$27,700 supplemental in 2019.
- 2017 USU Research & Graduate Studies (RGS) Capital Equipment Grant (PI Newell): \$7840
- 2016 – 2017 DOE-EERE: Geothermal Play Fairway Analysis Snake River Plain: Phase 2 (PI Shervais; Co-I's Newell & Evans): \$800,000
- 2014 – 2016 USU RGS Research Assistantships: (PI Newell, Co-I Evans): \$40,000
- 2014 USU RGS Capital Equipment Grant (PI Newell): \$60,292

Los Alamos National Laboratory (LANL)

- 2012 – 2013 LANL Laboratory Directed Research & Development grant: CO₂-based hydrofracturing fluids
- 2010 – 2013 LANL/DOE: Geomechanical Test Bed Natural analog study
- 2009 – 2012 LANL National Algal Biofuels Consortium - CO₂ regulation to algae

Publications (*graduate and #undergraduate student mentee)

In Review/Revision

*Grambling, T.A., Jessup, M.J., **Newell, D.L.**, Grambling, N.L., and Hiatt, C.D., *in revision*, Protracted Magmatism and rapid intrusion in the high Andes: Contrasting magmatic conditions preceding synconvergent extension above the Peruvian flat slab: Geosphere.

Articles in Peer-Reviewed Journals

Shervais, J. W., DeAngelo, J., Glen, J. M., Nielson, D. L., Garg, S., Dobson, P. F., Gasperikova, E., Sonnenthal, E., Liberty, L. M., **Newell, D. L.**, Siler, D., and Evans, J. P., *accepted*, Geothermal Play Fairway Analysis, Part 1: Example from the Snake River Plain, Idaho: Geothermics.

- Newell, D.L.**, Benowitz, J.A., Regan, S., and *Hiett, C.H., 2023, Roadblocks and speed limits: mantle-to-surface volatile flux through the lithospheric-scale Denali fault, Alaska: *Geology*, v. 51, p. 576-580.
- Lachmar, T., Neupane, G., Garg, S., Dobson, P. F., Smith, C. J., **Newell, D. L.**, Shervais, J. W., Evans, J. P., and Mink, L. L., 2023, Evaluation of the geothermal potential of Camas Prairie, south-central Idaho based on Play Fairway Analysis and an exploration well: *Geothermal Energy*, v. 11, 21.
- Payne, D., Spietz, R.L., **Newell, D.L.**, Dijkstra, P., and Boyd, E.S., 2023, Influence of sulfide on diazotrophic growth of the methanogen *Methanococcus maripaludis* and its implications for the origin of nitrogenase: *Communications Biology*, v. 6, no. 1, p. 799.
- *Upin, H.E., **Newell, D.L.**, Colman, D.R., and Boyd, E.S., 2023, Tectonic influences on the microbial diversity of Peru hot springs: *Communications Earth & Environment*, v. 4, 112.
- *Hiett, C.H., **Newell, D.L.**, Jessup, M.J., Grambling, T.A., *Scott, B.E., and *Upin, H.E., 2022, Deep CO₂ and N₂ emissions from Peruvian hot springs: Stable isotopic constraints on volatile cycling in a flat-slab subduction zone: *Chemical Geology*, v. 595, p. 120787.
- *Grambling, T.A., Jessup, M.J., **Newell, D. L.**, Methner, K., Mulch, A., Hughes, C.A., and Shaw, C.A., 2022, Miocene to modern hydrothermal circulation and high topography during synconvergent extension in the Cordillera Blanca, Peru: *Geology*, v. 50, p. 106-110.
- *Hiett, C.D., **Newell, D. L.**, and Jessup, M.J., 2021, ³He evidence for fluid transfer and continental hydration above a flat slab: *Earth and Planetary Science Letters*, v. 556, p. 116722.
- *Provow, A.W., **Newell, D.L.**, Dehler, C.M., Ault, A.K., Yonkee, A., Thomson, S.N., and Mahan, K.H., 2021, Revised maximum depositional age for the Ediacaran Browns Hole Formation: Implications for Western Laurentia Neoproterozoic Stratigraphy: *Lithosphere*, v. 2021, no. 1.
- Gardiner, J., Capo, R., **Newell, D.L.**, Stewart, B., Phan, T., Keating, E., Guthrie, G., and Hakala, J., 2021, Tracking natural CO₂ migration through a sandstone aquifer using Sr, U and C isotopes: Chimayó, New Mexico, USA: *International Journal of Greenhouse Gas Control*, v. 104, p. 103209.
- Homewood, P., Mettraux, M., Vanden Berg, M.D., Foubert, A., Neumann, R., **Newell, D.L.**, and Atwood, G., 2021, Onshore groundwater spring carbonate mounds to lacustrine microbialites, the perplexing record of a transitional Great Salt Lake carbonate shoreline at Lakeside, Utah: *The Depositional Record*.
- Houser, L.M., Ault, A.K., **Newell, D.L.**, Evans, J.P., Shen, F.-A., and Van Devener, B.R., 2021, Nanoscale textural and chemical evolution of silica fault mirrors in the Wasatch fault damage zone, Utah, USA: *Geochemistry, Geophysics, and Geosystems*, v. 22, no. 3, p. e2020GC009368.
- Taylor, M.P., Ault, A.K., Odlum, M.L., and **Newell, D.L.**, 2021, Shallow rupture propagation of Pleistocene earthquakes along the Hurricane fault, UT, revealed by hematite (U-Th)/He thermochronometry and textures: *Geophysical Research Letters*, v. 48, p. e2021GL094379.
- Lachmar, T., Sorsby, S., and **Newell, D.L.**, 2021, Geochemical insights into groundwater movement in alpine karst, Bear River Range, Utah, USA: *Hydrogeology Journal*, v. 29, no. 2, p. 687-701.
- *Scott, B., **Newell, D.L.**, Jessup, M.J., Grambling, T.A., and Shaw, C.A., 2020, Structural controls on crustal fluid circulation and hot spring geochemistry above a flat-slab subduction zone, Peru: *Geochemistry, Geophysics, Geosystems*, v. 21, no. 7, p. 1-19.
- *Koger, J.M., and **Newell, D.L.**, 2020, Spatiotemporal history of fault–fluid interaction in the Hurricane fault, western USA: *Solid Earth*, v. 11, no. 6, p. 1969-1985.

- Hughes, C.A., Jessup, M.J., Shaw, C.A., and **Newell, D.L.**, 2020, Evidence for strain rate variation and an elevated transient geothermal gradient during shear zone evolution in the Cordillera Blanca, Peru: *Tectonophysics*, v. 794, p. 228610.
- Hughes, C.A., Jessup, M.J., Shaw, C.A., and **Newell, D.L.**, 2019, Deformation conditions during syn-convergent extension along the Cordillera Blanca shear zone, Peru: *Geosphere*, v. 15.
- Newell, D.L.**, Carey, J.W., Backhaus, S.N., Lichtner, P., 2018, Experimental study of gravitational mixing of supercritical CO₂: *International Journal of Greenhouse Gas Control*, v. 71, p. 62-73.
- Reimus, P., Dean, C., and **Newell, D.L.**, 2018, Evaluation of a cation-exchanging tracer to interrogate fracture surface area in enhanced geothermal systems: *Geothermics*, v. 71, p. 12-23. doi: 10.1016/j.geothermics.2017.08.002.
- Newell, D.L.**, #Jensen, J.L., Frantz, C.M., Vanden Berg, M.D., 2017, Great Salt Lake (Utah) microbialite $\delta^{13}\text{C}$, $\delta^{18}\text{O}$, and $\delta^{15}\text{N}$ record fluctuations in lake biogeochemistry since the late Pleistocene: *Geochemistry, Geophysics, and Geosystems*, v. 18, p. 3631–3645. doi: 10.1002/2017GC007078.
- Newell, D.L.**, Jessup, M.J., Hilton, D.R., Shaw, C., and Hughes, C., 2015, Mantle-derived helium in hot springs of the Cordillera Blanca, Peru: implications for mantle-to-lithosphere fluid transfer in a flat slab subduction setting: *Chemical Geology*, v. 417, 200 – 209.
- Dean, C., Reimus, P., Leecaster, K., Oates, J., Rose, P., **Newell, D.L.**, and Petty, S., 2015, Laboratory experiments to characterize cation-exchanging tracer behavior for fracture surface area estimation at Newberry Crater, OR: *Geothermics*, v. 53, 213-224.
- Newell, D.L.**, Larson, T.E., Perkins, G., Pugh, J.D., Stewart, B.W., Capo, R.C., and Trautz, R.C., 2014, Tracing CO₂ leakage into groundwater using carbon and strontium isotopes during a controlled CO₂ release field test: *International Journal of Greenhouse Gas Control*, v. 29, 200-208.
- Evans, J.P., Prante, M.R., Janecke, S.U., Ault, A.K., and **Newell, D.L.**, 2014, Hot Faults: Iridescent slip surfaces with metallic luster document high-temperature ancient seismicity in the Wasatch fault zone, Utah, USA: *Geology*, v. 42, no. 7, p. 623-626. doi: 10.1130/G35617.1
- Keating, E. H., **Newell, D. L.**, Dempsey, D., and Pawar, R., 2014, Insights into interconnections between the shallow and deep systems from a natural CO₂ reservoir near Springerville, Arizona: *International Journal of Greenhouse Gas Control*, v. 25, p. 162-172.
- Herring, A.L., Andersson, L., **Newell, D.L.**, Carey, J.W., and Wildenschild, D., 2014, Pore-scale observations of supercritical CO₂ drainage in Bentheimer sandstone by synchrotron x-ray imaging: *International Journal of Greenhouse Gas Control*, v. 25, p. 93-101.
- Williams, A.J., Crossey, L.J., Karlstrom, K.E., **Newell, D.L.**, Person, M., and Woolsey, E., 2013, Hydrogeochemistry of the Middle Rio Grande aquifer system - fluid mixing and salinization of the Rio Grande due to fault inputs: *Chemical Geology*, v. 351, p. 281-298.
- Newell, D.L.**, and Carey, W.J., 2013, Experimental evaluation of wellbore integrity along the cement-rock boundary: *Environmental Science and Technology*, v. 47, p. 276-282.
- Keating, E.H., **Newell, D.L.**, Viswanathan, H., Carey, J.W., Zyvoloski, G., and Pawar, R., 2013, CO₂/Brine Transport into Shallow Aquifers along Fault Zones: *Environmental Science & Technology*, v. 47, p. 290-297.
- Trautz, R., Pugh, J., Varadharajan, C., Zheng, L., Bianchi, M., Nico, P.S., Spycher, N., **Newell, D.L.**, Esposito, R.A., Wu, Y., Dafflon, B., Hubbard, S.S., and Birkholzer, J., 2013, Effect of Dissolved CO₂ on a Shallow Groundwater System—A Controlled Release Field Experiment: *Environmental Science & Technology*, v. 47, p. 298-305.

- Langille, J.M., Jessup, M.J., Cottle, J.M., **Newell, D.L.**, and Seward, G., 2010, Kinematic evolution of the Ama Drime detachment: Insights into orogen-parallel extension and exhumation of the Ama Drime Massif, Tibet-Nepal: *Journal of Structural Geology*, v. 32, p. 900-919.
- Crossey, L.J., Karlstrom, K.E., Springer, A., **Newell, D.L.**, Hilton, D.R., and Fischer, T.P., 2009, Degassing of mantle-derived CO₂ and ³He from springs in the southern Colorado Plateau region - flux rates, neotectonic connections, and implications for groundwater systems: *GSA Bulletin*, v. 121, p. 1034-1053.
- Kirk, M.F., Crossey, L.J., Takacs-Vesbach, C., **Newell, D.L.**, and Bowman, R.S., 2009, Influence of upwelling saline groundwater on iron and manganese cycling in the Rio Grande floodplain aquifer: *Applied Geochemistry*, v. 24, p. 426-437.
- Cottle, J.M., Jessup, M.J., **Newell, D.L.**, Horstwood, M.S.A., Noble, S.R., Parrish, R.R., Waters, D.J., and Searle, M.P., 2009, Geochronology of granulitized eclogite from the Ama Drime Massif: Implications for the tectonic evolution of the South Tibetan Himalaya: *Tectonics*, v. 28, p. TC1002, doi:10.1029/2008TC002256a.
- Newell, D.L.**, Kaszuba, J.P., Viswanathan, H.S., Pawar, R.J., and Carpenter, T., 2008, Significance of carbonate buffers in natural waters reacting with supercritical CO₂ - implications for Monitoring, Measuring and Verification (MMV) of geological carbon sequestration: *Geophysical Research Letters*, v. 35, p. L23403, doi: 10.1029/2008GL035615.
- Newell, D.L.**, Jessup, M.J., Cottle, J.M., Hilton, D., Sharp, Z., and Fischer, T., 2008, Aqueous and isotope geochemistry of mineral springs along the southern margin of the Tibetan plateau: Implications for fluid sources and regional degassing of CO₂: *Geochemistry, Geophysics, and Geosystems*, v. 9, p. Q08014, doi:10.1029/2008GC002021.
- Jessup, M.J., **Newell, D.L.**, Cottle, J.M., Berger, A.L., and Spotila, J.A., 2008, Orogen-parallel extension and exhumation enhanced by denudation in the trans-Himalayan Arun River gorge, Ama Drime Massif, Tibet-Nepal: *Geology*, v. 36, p. 587-590.
- Jessup, M.J., Cottle, J.M., Searle, M.P., Law, R.D., **Newell, D.L.**, Tracy, R.J., and Waters, D.J., 2008, P-T-t-D paths of Everest Series schist, Nepal: *Journal of Metamorphic Geology*, v. 26, p. 717-739.
- Zentmyer, R., Myrow, P., and **Newell, D.L.**, 2008, Travertine deposits from along the South Tibetan Fault System near Nyalam, Tibet: *Geological Magazine*, v. 145, no. 6, p. 753-765, doi:10.1017/S0016756808005323.
- Cottle, J.M., Jessup, M.J., **Newell, D.L.**, Searle, M.P., Law, R.D., and Horstwood, M., 2007, Structural insights into the early stages of exhumation along an orogen-scale detachment: The South Tibetan Detachment System, Dzaka Chu section, Eastern Himalaya: *Journal of Structural Geology*, v. 29, p. 1781-1797.
- Crossey, L.J., Fischer, T.P., Patchett, P.J., Karlstrom, K.E., Hilton, D.R., Huntoon, P., **Newell, D.L.**, and Reynolds, A., 2006, Dissected hydrologic system at the Grand Canyon: Interaction between deeply derived fluids and plateau aquifer waters in modern springs and travertine: *Geology*, v. 34, p. 25-28.
- Newell, D.L.**, Crossey, L.J., Karlstrom, K.E., Fischer, T.P., and Hilton, D.R., 2005, Continental-scale links between the mantle and groundwater systems of the Western United States: Evidence from travertine springs and regional He isotope data: *GSA Today*, v. 15, p. 4-10.
- Levitt, D.G., **Newell, D.L.**, Stone, W.J., and Wykoff, D.S., 2005, Surface Water–Groundwater Connection at the Los Alamos Canyon Weir Site: Part 1. Monitoring Site Installation and Tracer Tests: *Vadose Zone Journal*, v. 4, p. 708-717.

Kowalewski, M., Demko, T.M., Hasiotis, S.T., and **Newell, D.L.**, 1998, Quantitative Ichnology of Triassic Crayfish Burrows (*Camborygma Eumekenomos*): Ichnofossils as Linkages to Population Paleoecology: *Ichnos*, v. 6, p. 5-21.

Reports, Field Trip Guidebooks, Maps, Theses

Koning, D., **Newell, D.L.**, Sarna-Wojcicki, A., Dunbar, N., Karlstrom, K., Salem, A., and Crossey, L., 2011, Terrace stratigraphy, ages, and incision rates along the Rio Ojo Caliente, north-central New Mexico: New Mexico Geological Society, *in* Proceedings 62nd Field Conference Guidebook, p. 281-300.

Newell, D.L., 2007, Hydrogeochemistry of CO₂-rich Mineral Springs: Implications for Tectonics and Microbiology [Dissertation]: Albuquerque, University of New Mexico.

Newell, D.L., 2007, Travertine: *Eos Trans. AGU*, v. 88, p. 242. (Book Review)

Koning, D., Karlstrom, K., Skotnicki, S., Horning, R., **Newell, D.L.**, and Muehlberger, W. R., 2005, Preliminary geologic map of the Ojo Caliente 7.5-minute quadrangle, Rio Arriba and Taos Counties, New Mexico.

Newell, D.L., Koning, D., Karlstrom, K.E., Crossey, L.J., and Dillon, M., 2004, Plio-Pleistocene Incision History of the Rio Ojo Caliente, Northern Espanola Basin, and Overview of the Rio Grande System in Northern New Mexico: New Mexico Geological Society Guidebook, 55th Field Conference, Geology of the Taos Region, p. 121-134.

Stone, W.J., **Newell, D.L.**, Levitt, D.G., Wykoff, D.S., Stauffer, P., Longmire, P., Groffman, A.R., Jones, C.H., and Roback, R., 2004, Results of monitoring at the Los Alamos canyon low-head weir, 2002-2003: Rep. LA-14103-MS, Los Alamos National Laboratory, Los Alamos, NM.

Stone, W.J., and **Newell, D.L.**, 2002, Installation of the monitoring to the weir site to simulate the transport characteristics site at the Los Alamos canyon low-head weir: Rep. LA-13970, Los Alamos National Laboratory, Los Alamos, NM.

Newell, D.L., 1997, Geology of the Brushy Basin Member of the Morrison Formation, Fruita Paleontological Resource Area, Colorado [Masters thesis]: Fort Collins, Colorado State University.

Selected Conference Proceedings

Newell, D. L., Benowitz, J. A., Regan, S. P., and *Hielt, C., Roadblocks and speed limits to volatile transport in active continental faults revealed by warm spring ³He/⁴He data patterns along the Denali fault, Alaska, *in* Proceedings Goldschmidt 2023, Lyon, 2023.

*Hielt, C., **Newell, D. L.**, #Schiwal, A., 2022. Metasomatic enrichment of the northern Altiplano lithosphere constrained by isotopic and trace element characteristics of biotite monzogabbro and pyroxenite xenoliths, Geological Society of America Abstracts with Programs. Vol 54, No. 5.

Newell, D. L., Benowitz, J. A., and Regan, S., 2022. Mantle fluid contribution to springs along the Denali Fault system: ³He/⁴He constraints on the crustal scale nature of the main strand, Hines Creek and splays, Geological Society of America Abstracts with Programs. Vol 54, No. 2.

*Hielt, C., **Newell, D. L.**, Jessup, M. J., Grambling, T. A., *Scott, B. E., and *Upin, H., 2021. From Mantle to Surface in the Absence of Magmatism: Mantle Gases in Peruvian Hot Springs and Implications for Volatile Cycling in Flat-Slab Subduction Zones, *in* Proceedings AGU Fall Meeting 2021.

- *Frederickson, C. F., **Newell, D. L.**, and Lonero, A., 2021, Fingerprinting paleo-groundwater sources using oxygen isotopes of hematite concretions from the “boiler room”, Moab area, Utah, Geological Society of America Abstracts with Programs. Vol 53, No. 6, 2021.
- *Grambling, T. A., Jessup, M. J., **Newell, D. L.**, Methner, K., Mulch, A., Hughes, C., and Shaw, A. M., 2021, Assessment of stable isotope-based lapse rates in the upper Rio Santa watershed, Cordillera Blanca, Peru, and implications for regional paleoaltimetry studies, 2021 Geological Society of America Abstracts with Programs. Vol 53, No. 6, 2021.
- Smith, C., Lachmar, T., Shervais, J. W., Evans, J. P., and **Newell, D. L.**, 2021, Evaluation of the geothermal potential of the Camas Prairie, south-central Idaho, 2021, Geological Society of America Abstracts with Programs. Vol 53, No. 6, 2021.
- *Hielt, C., **Newell, D. L.**, *Upin, H., Jessup, M., *Scott, B., *Grambling, T., Hughes, C., and Shaw, C., 2020. Mantle-to-Surface Fluid Transit Times Estimated from Helium Isotopes in Thermal Springs above the Peruvian Flat Slab: Implications for Tectonic Controls during Flat Slab-to-Lithosphere Fluid Transfer, *in* Proceedings AGU Fall Meeting, Volume 2020, p. V046-006.
- *Frederickson, C. F., **Newell, D. L.**, and Lonero, A., 2020, Fingerprinting paleo-groundwater sources using oxygen isotopes of hematite concretions from the “boiler room”, Moab area, Utah, Geological Society of America Abstracts with Programs. Vol 52, No. 6.
- *Grambling, T. A., Jessup, M. J., **Newell, D. L.**, Methner, K., Mulch, A., Hughes, C., and Shaw, A. M., 2020. Evidence for meteoric fluid infiltration into a young, active mid-crustal shear zone: $\delta^2\text{H}$ of mica fish from the Cordillera Blanca Shear Zone, Peruvian Andes, Geological Society of America Abstracts with Programs. Vol 52, No. 6.
- *Upin, H., **Newell, D. L.**, and Boyd, E. S., 2019. Connections Between Hydrothermal System Geochemistry and Microbiology: Traversing Tectonic Boundaries in the South-Central Peruvian Andes, Geological Society of America Abstracts with Programs. Vol. 51, No. 5.
- Taylor, M. P., Ault, A. K., and **Newell, D. L.**, 2019. Hematite microtextures and (U–Th)/He thermochronometry of the Hurricane fault, southwestern Utah: evidence for a paleoearthquake?, Geological Society of America Abstracts with Programs. Vol. 51, No. 5.
- Newell, D. L.**, Jessup, M. J., *Upin, H., *Scott, B. E., Grambling, T. A., *Hielt, C. D., Shaw, C. A., and Hughes, C. A., 2019. He and CO₂ flux from the Peruvian flat slab estimated from hot spring geochemistry, Geological Society of America Abstracts with Programs. Vol. 51, No. 5.
- *Hielt, C. D., **Newell, D. L.**, Upin, H., Jessup, M. J., Scott, B. E., Grambling, T. A., Hughes, C. A., and Shaw, C. A., 2019. Mantle-to-crust fluid transfer above the Peruvian flat slab: Insight from helium isotopes in thermal springs of the Peruvian Andes, Geological Society of America Abstracts with Programs. Vol. 51, No. 5.
- *Grambling, T. A., Jessup, M. J., Shaw, C. A., and **Newell, D. L.**, 2019. Fluid inclusion evidence for hydrothermal activity and deep meteoric water circulation in the Cordillera Blanca Detachment, Peru, Geological Society of America Abstracts with Programs. Vol. 51, No. 5.
- Shervais, J.W., Glen, J., Liberty, L., Siler, D., Dobson, P., Gasperikova, E., **Newell, D. L.**, Garg, S. K., Nielson, D., and DeAngelo, J., 2019. Play Fairway Analysis in geothermal exploration: Case study in Snake River Plain volcanic province, Geological Society of America Abstracts with Programs. Vol. 51, No. 5.
- *Upin, H., **Newell, D. L.**, and Boyd, E.S., 2018. Connections Between Hydrothermal System Geochemistry and Microbiology: Traversing Tectonic Boundaries in the South-Central Peruvian Andes, *in* Proceedings AGU Fall Meeting Abstracts 2018.
- Grambling, T.A., Jessup, M.J., Hughes, C.A., **Newell, D.L.** and Shaw, C.A., 2018. Examining strain gradients along a mylonitic extensional detachment fault: microstructural analysis of the

- Cordillera Blanca Detachment, Northern Peru. Geological Society of America Abstracts with Programs, 50(3).
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- Jessup, M.J., Shaw, C.A., Hughes, C.A. and **Newell, D.L.**, 2018. Rheology, kinematics, and thermal conditions during syn-convergent extension on the Cordillera Blanca detachment, Peru. Geological Society of America Abstracts with Programs, 50(3).
- Lathrop, E.C., Dehler, C.M., Anderson, J.C., Karlstrom, K.E., Hagadorn, J.W., Pulsipher, M.A., Crossey, L.J., Timmons, J.M. and **Newell, D.L.**, 2017. Not-so-boring Bass: C-isotope stratigraphy and facies analysis of the Mesoproterozoic Bass Formation, Grand Canyon, AZ. Geological Society of America Abstracts with Programs, 49(6).
- Newell, D.L.**, Jessup, M.J., *Koger, J. and *Scott, B.E., 2017. Isotopic record of fluid-fault interaction in modern and ancient extensional systems. Geological Society of America Abstracts with Programs, 49(6).
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Field Experience

Eastern Anatolian and Çardak faults – Turkey; 2023

Southern San Andreas fault; 2023

Denali fault – Alaska; 2021

Peruvian Andes - Cordillera Blanca, Huayhuash, and Altiplano; 2013, 2015, 2017, 2018, 2019

Hurricane fault, southern Utah, 2014, 2015

Himalaya – Khumbu; southern Tibetan Plateau; 2004, 2005, 2006, 2007

Rio Grande rift and Colorado Plateau; 2003-2006

Grand Canyon (river research expeditions); 2003, 2004, 2005

Analytical Experience

Light stable isotope analyses: Thermo Scientific Delta V IRMS, Gasbench II, Costech EA, Thermo Scientific TC/EA; Picarro CO₂ Analyzer

³He/⁴He analysis: noble gas mass spectrometry

Experimental geochemistry: hydrothermal batch rocking autoclaves, and biaxial/triaxial core flood

Fluid inclusion microthermometry

Aqueous and gas chemistry: ICP-MS, ion chromatography, and gas chromatography

Clay mineralogy: X-ray Diffraction

Teaching Experience

Course	Number (credits)	Institution	Dates
Stable Isotope Geochemistry	GEO 6300/7300 (2)	USU ^a	S15, S17, S23
Aqueous Geochemistry	GEO 6190 (3)	USU	F14, F16, F18, F22
Geochemistry	GEO 5600 (4)	USU	S13, S14, S16, S18, S20, S22
Physical Geology	GEO 1110 (4)	USU	S13, S15, F17, F19, F21, F23
Geology Field Camp	GEO 5200 (5) ^b	USU	Summer 14, 16, 19
Communicating Geosciences	GEO 3400 (3)	USU	S17, S19
Geological Field Excursions	GEO 2500 (1)	USU	F14
Hydrogeology	Geol 430 (4)	WSC ^c	S09
Physical Geology	Geol 101 (4)	WSC	F08, S09

^a Utah State University; ^b Team taught; ^c Western State College of Colorado, Geology

Mentoring

Graduate Advisor (9 students)

Kayla Chaudoir (MS student), 2021 – present

Shelby Litton (MS student), 2021 - present

Coleman Hiatt (PhD Geology), 2018 – 2023, “Volatile cycling and metasomatism in flat-slab subduction zones of the central Andes”

Connor Frederickson (MS Geology), 2019 – 2022 “Fingerprinting Paleo-groundwater Sources Using Oxygen and Iron Isotopes of Iron Oxide Concretions from the “Boiler Room”, Moab Area, Utah”

Heather Upin (MS Geology), 2018 – 2020 “Connections Between Hydrothermal System Geochemistry and Microbiology: Traversing Tectonic Boundaries in the South-central Peruvian Andes”

Ashley Provow (MS Geology), 2016 – 2019 “Ediacaran Depositional Age and Subsequent Fluid-rock Interaction in the Mutual and Browns Hole Formations of Northern Utah”

Brandt Scott (MS Geology), 2016 – 2019 “Structural Controls of Thermal Fluid Circulation and Geochemistry in a Flat-slab Subduction Zone, Peru”

Jace Koger (MS Geology) 2014 – 2017 “Spatio-temporal History of Fluid-Rock Interaction in the Hurricane Fault Zone”

Trevor Atkinson (MS Geology) 2013 – 2015 “Geochemical Characterization of the Mountain Home Geothermal System”

Graduate Committee (27 students)

A. DiMonte (PhD), S. Anee (PhD), E. Armstrong (PhD), J. Jensen (PhD), H. Tennant (PhD), R. Hodges (PhD), T. Grambling (PhD, UTK), L. Bailey (PhD, U of A), D. Hill (MS), C. Howard (MS), H. Cornachione (PhD), K. Bohora (PhD), L. Houser (MS), M. Devey (MS), J. Schoppe (MS), K. Smith (MS), K. Paukert (MS), K. Wagner (MS), S. Sorsby (MS), E. Keller (MS), C. Davis (MS), M. Channer (MS), C. Watkins (MS), D. Jones (MS), D. Strohm (MS), E. Rasmussen (MS), R. Wood (MS)

Undergraduate Mentor (9 students)

Jacob Ladner (2021-2023), Undergraduate Research & Creative Opportunity (URCO) funding; Alyssa Schiwal (BS Geology 2022); Kendra Bunnell (BS Geology 2017), College of Science Researcher of the Year, URCO funding; Jordan Jensen (BS Geology 2016), College of Science Researcher of the Year, URCO funding; Josh Gathrow (BS Geology 2016), URCO funding; Shawna Olsen (BS Geology 2015); Kenny Kehoe (BS Geology 2015); Cody Watkins (BS Geology 2015), URCO funding; Elizabeth Horne (BS Geology 2014), URCO funding

Service & Synergistic Activities

Professional Service

Geological Society of America:

Past Chair MGPV Division: 2022 - 2023

Chair MGPV Division: 2021– 2022

First Vice Chair MGPV Division: 2020–2021

Technical co-chair: GSA Joint Cordillera-Rocky Mtn Section Meeting 2022

Co-chair: GSA Joint Cordillera-Rocky Mtn Section Meeting 2018

Proposal Reviewer: National Science Foundation (Panel; ad hoc), Petroleum Research Fund, NERC, NEUP, National Geographic Society Geology

Manuscript Reviewer: Nature Geosciences, EPSL, Q Geology, G-Cubed, Geology, GSA Bulletin, Geochimica et Cosmochimica Acta, International Journal of Greenhouse Gas Control, Global and Planetary Change, Chemical Geology, Applied Geochemistry, Journal of Hydrology, JGR, ES&T, Journal of Sedimentary Research, Limnology and Oceanography, Journal of Volcanology and Geothermal Research, Journal of Structural Geology, Solid Earth, Basin Research, GRL, JGR Solid Earth, Geothermics, PEPS, Canadian Mineralogist, NMGS, Utah Geological Association

Membership: Geological Society of America, American Geophysical Union, and Geochemical Society

Utah State University Service

Dept. of Geosciences Graduate Director: 2021 – present

AGU Bridge Program coordinator for USU Geosciences

Geosciences Search Committee member: 2023

Geosciences Search Committee Chair: 2020

Tenure & Promotion committees: 3 in Geosciences, 1 in Chemistry

Outreach: USU Native America Student Mentoring Program (2017, 2018); USU Stable Isotope Lab visits and demonstrations to 5th and 6th grade students from the Promontory School for Expeditionary Learning, Perry Utah (2016)

USU Geosciences Laboratory Safety Officer: 2013 - present

USU College of Science Safety Committee: 2015 - present

USU Department of Geology Distinguished Speaker Series Coordinator: 2014-2015

USU Undergraduate Research and Creative Opportunity (URCO) proposal review panel: 2014-2015

Invited Presentations

Jun. 23, 2023: Cooperative Institute for Dynamic Earth Research (CIDER), UC Berkeley

Feb. 10, 2022: University of Tennessee Knoxville, Klepser Seminar Series

Sep. 14, 2021: Utah Valley University, Seminar Series

Sep. 10, 2018: Utah Geological Association, Lecture Series

Oct. 22, 2017: Geological Society of America, Annual Meeting

Sep. 25, 2017: Weber State University, Department of Geosciences, Speaker Series

Mar. 27, 2017: Utah State University, Department of Geology, Distinguished Lecture Series

Oct. 8, 2015: University of Utah, Department of Geology & Geophysics, Distinguished Lecture Series

Oct. 5, 2015: University of Wyoming, Dept. of Geology and Geophysics, Distinguished Lecture Series

Feb. 13, 2014: University of Arizona, Dept. of Geosciences Colloquium Series

Oct. 2, 2013: Idaho State University, Dept. of Geosciences Speaker Series