

Sean Patrick Long
Associate Professor, Earth Science
School of the Environment
Washington State University

Curriculum Vitae
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Contact information:

Office: 1155 Webster Hall
Office Telephone: (509) 335-8868
Email: sean.p.long@wsu.edu
Website: www.seanpatricklong.com

Mailing address: School of the Environment
Washington State University
PO Box 642812
Pullman WA 99164-2812

Education:

Ph.D., Geology Princeton University, 2010
M.S., Geology Idaho State University, 2004
B.S., Mathematics The College of Idaho, 2001

Professional experience:

2015-present Associate professor, School of the Environment, Washington State University
2010-2015 Assistant professor, Nevada Bureau of Mines and Geology, University of Nevada, Reno
2006-2010 Teaching/research assistant, Princeton University
2008 Summer Internship, Chevron Energy Technology Corporation
2006 Summer Contract field geologist, New Mexico Bureau of Geology and Mineral Resources
2005-2006 Adjunct instructor/research associate, Idaho State University
2004 Environmental consulting geologist, Glorieta Geoscience, Inc., Santa Fe, New Mexico
2002-2004 Teaching/research assistant, Idaho State University
2002 Spring Teaching assistant, University of Idaho

Google Scholar citation indices:

Total citations: 1012 (829 since 2013)
h-index: 15 (15 since 2013)
i10-index: 21 (21 since 2013)

Publications: (*asterisk denotes graduate student advisee author; double asterisk denotes undergraduate student advisee author*)

A. Peer-reviewed journal articles and geologic maps:

In review:

37. **Long, S.P.**, Heizler, M.T., Thomson, S.N., Reiners, P.W., and Fryxell, J.E., in review, Rapid Oligocene to early Miocene extension along the Grant Range detachment system, eastern Nevada, U.S.A.: insights from multi-part cooling histories of footwall rocks: revisions submitted to *Tectonics* 6-29-18.

In press:

36. Calle, A.Z., Horton, B.K., Limachi, R., Stockli, D.F., Uzeda-Orellana, G.V., Anderson, R.B.*, and **Long, S.P.**, in press, Cenozoic provenance and depositional record of the Subandean foreland basin during growth of the central Andean fold-thrust belt, southern Bolivia, *in* Zamora, G., McClay, K., and Ramos, V., *Petroleum Basins and Hydrocarbon Potential of the Andes of Peru and Bolivia: American Association of Geologists Memoir 117*: accepted 5-23-17.

Published:

35. Anderson, R.B. *, **Long, S.P.**, Horton, B.K., Thomson, S.N., Calle, A.Z., and Stockli, D.F., 2018, Orogenic wedge evolution of the central Andes, Bolivia (21°S): Implications for Cordilleran cyclicity: *Tectonics*, accepted 8-16-18.
34. **Long, S.P.**, 2018, Geometry and magnitude of extension in the Basin and Range Province (39°N), California, Nevada, and Utah, U.S.A: Constraints from a province-scale cross section: *Geological Society of America Bulletin*, doi: 10.1130/B31974.1, published online 8-15-18.
33. **Long, S.P.**, Gordon, S.M., and Soignard, E., 2017, Distributed north-vergent shear and flattening through Greater and Tethyan Himalayan rocks: insights from metamorphic and strain data from the Dang Chu region, central Bhutan: *Lithosphere*, v. 9, p. 774-795, doi: 10.1130/L655.1.
32. Anderson, R.B. *, **Long, S.P.**, Horton, B.K., Calle, A.Z., and Ramirez, V., 2017, Shortening and structural architecture of the Andean fold-thrust belt of southern Bolivia (21°S): Implications for kinematic development and crustal thickening of the central Andes: *Geosphere*, v. 13, p. 538-558, doi: 10.1130/GES01433.1.
31. **Long, S.P.**, Gordon, S.M., Young, J.P., and Soignard, E., 2016, Temperature and strain gradients through Lesser Himalayan rocks and across the Main Central thrust, south-central Bhutan: implications for transport-parallel stretching and inverted metamorphism: *Tectonics*, v. 35, p. 1863-1891, doi: 10.1002/2016TC004242.

30. Agustsson, K.M., Gordon, S.M., **Long, S.P.**, Seward, G.G.E., Zeiger, K., and Penfold, M.*, 2016, Pressure–temperature–structural distance relationships within Greater Himalayan rocks in eastern Bhutan: implications for emplacement models: *Journal of Metamorphic Geology*, v. 34, p. 641-662, doi: 10.1111/jmg.12197.
29. **Long, S.P.**, and Soignard, E., 2016, Shallow-crustal metamorphism during Late Cretaceous anatexis in the Sevier hinterland plateau: peak temperature conditions from the Grant Range, eastern Nevada, U.S.A.: *Lithosphere*, v. 8, p. 150-164, doi: 10.1130/L501.1.
28. **Long, S.P.**, and Walker, J.P., 2015, Geometry and kinematics of the Grant Range brittle detachment system, eastern Nevada, U.S.A.: an end-member style of upper-crustal extension: *Tectonics*, v. 34, p. 1837-1862, doi: 10.1002/2015TC003918.
27. Zeiger, K., Gordon, S.M., **Long, S.P.**, Kylander-Clark, A.R.C., Agustsson, K., and Penfold, M.*, 2015, Timing and conditions of metamorphism and melt crystallization in Greater Himalayan rocks, eastern and central Bhutan: insight from U-Pb zircon and monazite geochronology and trace-element analyses: *Contributions to Mineralogy and Petrology*, v. 169, article 47, 19 p., doi: 10.1007/s00410-015-1143-6.
26. Di Fiori, R.V.*, **Long, S.P.**, Muntean, J.L., and Edmondo, G.P., 2015, Structural analysis of gold mineralization in the southern Eureka mining district, Nevada: a predictive structural setting for Carlin-type gold deposits: *in* Pennell, W.M., and Garside, L.J., eds., *New Concepts and Discoveries: Geological Society of Nevada Symposium Proceedings, May 2015, Sparks, Nevada*, v. 1, p. 885-903. (2 peer-reviews)
25. **Long, S.P.**, Thomson, S.N., Reiners, P.W., and Di Fiori, R.V.*, 2015, Synorogenic extension localized by upper-crustal thickening: an example from the Late Cretaceous Nevadaplano: *Geology*, v. 43, p. 351-354, doi:10.1130/G36431.1.
24. **Long, S.P.**, 2015, An upper-crustal fold province in the hinterland of the Sevier orogenic belt, eastern Nevada, U.S.A.: a Cordilleran Valley and Ridge in the Basin and Range: *Geosphere*, v. 11, p. 404-424, doi:10.1130/GES01102.1.
23. **Long, S.P.**, Henry, C.D., Muntean, J.L., Edmondo, G.P., and Thomas, R.D., 2014, Geologic map of the southern part of the Eureka mining district, and surrounding areas of the Fish Creek Range, Mountain Boy Range, and Diamond Mountains, Eureka and White Pine Counties, Nevada: Nevada Bureau of Mines and Geology Map 183, 1:24,000-scale, 2 plates, 36 p. (3 peer-reviews)
22. Di Fiori, R.V.*, **Long, S.P.**, Edmondo, G.P., and Muntean, J.L., 2014, Preliminary geologic and alteration maps of Lookout Mountain, Ratto Ridge, and Rocky Canyon,

southern Eureka mining district, Eureka County, Nevada: Nevada Bureau of Mines and Geology Open-File Report 14-8, 1:10,000-scale, 2 plates. (non-reviewed)

21. **Long, S.P.**, 2014, Preliminary geologic map of Heath Canyon, central Grant Range, Nye County, Nevada: Nevada Bureau of Mines and Geology Open-File Report 14-6, 1:24,000-scale, 1 plate, 4 p. (non-reviewed)
20. **Long, S.P.**, Henry, C.D., Muntean, J.L., Edmondo, G.P., and Cassel, E.J., 2014, Early Cretaceous construction of a structural culmination, Eureka, Nevada, U.S.A.: implications for out-of-sequence deformation in the Sevier hinterland: *Geosphere*, v. 10, p. 564-584, doi:10.1130/GES00997.1.
19. McQuarrie, N., Tobgay, T., **Long, S.P.**, Reiners, P.W., and Cosca, M.A., 2014, Variable exhumation rates and variable displacement rates: documenting a recent slowing of Himalayan shortening in western Bhutan: *Earth and Planetary Science Letters*, v. 386, p. 161-174, doi:10.1016/j.epsl.2013.10.045.
18. McQuarrie, N., **Long, S.P.**, Tobgay, T., Nesbit, J.N., Gehrels, G., and Ducea, M., 2013, Documenting basin scale, geometry and provenance through detrital geochemical data: lessons from the Neoproterozoic to Ordovician Lesser, Greater, and Tethyan Himalayan strata of Bhutan: *Gondwana Research*, v. 23, p. 1491-1510, doi:10.1016/j.gr.2012.09.002.
17. **Long, S.P.**, McQuarrie, N., Tobgay, T., Coutand, I., Cooper, F.J., Reiners, P.W., Wartho, J., and Hodges, K.V., 2012, Variable shortening rates in the eastern Himalayan thrust belt, Bhutan: insights from multiple thermochronologic and geochronologic datasets tied to kinematic reconstructions: *Tectonics*, v. 31, TC5004, 23 p., doi:10.1029/2012TC003155.
16. **Long, S.P.**, 2012, Magnitudes and spatial patterns of erosional exhumation in the Sevier hinterland, eastern Nevada and western Utah, USA: Insights from a Paleogene paleogeologic map: *Geosphere*, v. 8, p. 881-901, doi:10.1130/GES00783.1.
15. Lewis, R., Link, P.K., Stanford, L., and **Long, S.**, 2012, Geologic Map of Idaho: Idaho Geological Survey Map 9, 1:750,000-scale, 1 plate, 18 p. (6 peer reviews)
14. Corrie, S.L., Kohn, M.J., McQuarrie, N., and **Long, S.P.**, 2012, Flattening the Bhutan Himalaya: *Earth and Planetary Science Letters*, v. 349-350, p. 67-74, doi:10.1016/j.epsl.2012.07.001.
13. Tobgay, T., McQuarrie, N., **Long, S.**, Kohn, M., and Corrie, S., 2012, The age and rate of displacement along the Main Central thrust in the western Bhutan Himalaya: *Earth and Planetary Science Letters*, v. 319-320, p. 146-158, doi:10.1016/j.epsl.2011.12.005.

12. **Long, S.P.**, McQuarrie, N., Tobgay, T., Grujic, D., and Hollister, L., 2011, Geologic map of Bhutan: *The Journal of Maps*, v2011, p. 184-192, 1:500,000-scale, doi:10.4113/jom.2011.1159. (3 peer reviews)
11. **Long, S.**, McQuarrie, N., Tobgay, T., and Hawthorne, J., 2011, Quantifying internal strain and deformation temperature in the eastern Himalaya: Implications for the evolution of strain in thrust sheets: *Journal of Structural Geology*, v. 32, p. 579-608, doi:10.1016/j.jsg.2010.12.011.
10. **Long, S.**, McQuarrie, N., Tobgay, T., and Grujic, D., 2011, Geometry and crustal shortening of the Himalayan fold-thrust belt, eastern and central Bhutan: *Geological Society of America Bulletin*, v. 123, p. 1427-1447, doi:10.1130/B30203.1.
9. **Long, S.**, McQuarrie, N., Tobgay, T., Rose, C., Gehrels, G., and Grujic, D., 2011, Tectonostratigraphy of the Lesser Himalaya of Bhutan: Implications for the along-strike stratigraphic continuity of the northern Indian margin: *Geological Society of America Bulletin*, v. 123, p. 1406-1426, doi:10.1130/B30202.1.
8. Tobgay, T., **Long, S.**, McQuarrie, N., Ducea, M., and Gehrels, G., 2010, Using isotopic and chronologic data to fingerprint strata: the challenges and benefits of variable sources to tectonic interpretations, the Paro Formation, Bhutan Himalaya: *Tectonics*, v. 29, TC6023, doi:10.1029/2009TC002637.
7. **Long, S.**, and McQuarrie, N., 2010, Placing limits on channel flow: insights from the Bhutan Himalaya: *Earth and Planetary Science Letters*, v. 290, p. 375-390, doi:10.1016/j.epsl.2009.12.033.
6. McQuarrie, N.M., Robinson, D., **Long, S.**, Tobgay, T., Grujic, D., Gehrels, G., and Ducea, M., 2008, Preliminary stratigraphic and structural architecture of Bhutan: Implications for the along strike architecture of the Himalayan system: *Earth and Planetary Science Letters*, v. 272, p. 105-117, doi:10.1016/j.epsl.2008.04.030.
5. **Long, S.P.**, and Link, P.K., 2007, Geologic Map Compilation of the Malad City 30' x 60' Minute Quadrangle, Idaho: Idaho Geological Survey Technical Report T-07-1, 1:100,000-scale. (non-reviewed)
4. **Long, S.P.**, Link, P.K., Janecke, S.U., Perkins, M.E., and Fanning, C.M., 2006, Multiple phases of Tertiary extension and synextensional deposition of the Miocene-Pliocene Salt Lake Formation in an evolving supradetachment basin, Malad Range, Southeast Idaho, U.S.A.: *Rocky Mountain Geology*, v. 41, no. 1, p. 1-27, doi:10.2113/gsrocky.41.1.1.
3. Rodgers, D.W., **Long, S.P.**, McQuarrie, N., Burgel, W.D., and Hersley, C.F., 2006, Geologic Map of the Inkom Quadrangle, Bannock County, Idaho: Idaho Geological Survey Technical Report T-06-2, 1:24,000-scale. (non-reviewed)

2. Steely, A.N., Janecke, S.U., **Long, S.P.**, Carney, S.J., Oaks, R.Q., Langenheim, V.E., and Link, P.K., 2005, Evolution of a late Cenozoic supradetachment basin above a flat-on-flat detachment with a folded lateral ramp, SE Idaho, *in* Pederson, J., and Dehler, C.M., eds., Interior Western United States: Geological Society of America Field Guide 6, p. 169-198, doi:10.1130/2005.fld006(08). (1 peer review)
1. **Long, S.P.**, Link, P.K., Janecke, S.U., and Rodgers, D.W., 2004, Geologic map of the Henderson Creek quadrangle, Oneida County, Idaho: Idaho Geological Survey Technical Report T-04-3, 1:24,000-scale. (non-reviewed)

B. Conference abstracts:

70. Di Fiori, R.V.*, **Long, S.P.**, Fetrow, A.C., Snell, K.E., and Bonde, J., 2018, Cretaceous syntectonic sedimentation and folding in the Diamond Mountains, eastern Nevada: a record of out-of-sequence contractional deformation in the Sevier hinterland: *Eos Trans., American Geophysical Union* 99 (63), Fall Meet. Suppl.
69. Anderson, R.B.*, **Long, S.P.**, Horton, B.K., Thomson, S.N., Calle, A.Z., and Stockli, D.F., 2018, Thrust belt response to rapid surface uplift and implications for Cordilleran cyclicity in the central Andes, *Eos Trans., American Geophysical Union* 99 (63), Fall Meet. Suppl.
69. Starnes, J.K.*, **Long, S.P.**, Zhang, J., and Gordon, S.M., 2018, Applying quartz fabric intensity parameters to delineate strain gradients across shear zones: examples from the Main Central thrust in western Bhutan: *Eos Trans., American Geophysical Union* 99 (63), Fall Meet. Suppl.
68. Fetrow, A.C., Snell, K.E., Di Fiori, R.V.*, **Long, S.P.**, and Bonde, J.W., 2018, Palustrine carbonates from Early Cretaceous Nevada: Lithologic and basin evolution analysis with implications for regional climatic change: *Eos Trans., American Geophysical Union* 99 (63), Fall Meet. Suppl.
67. **Long, S.P.**, 2018, Magnitude, distribution, and driving mechanisms of Basin and Range extension: insights from a province-wide cross section at 39°N: *Eos Trans., American Geophysical Union* 99 (63), Fall Meet. Suppl.
66. Anderson, R.B., **Long, S.P.**, Horton, B.K., Thomson, S.N., Calle, A.Z., and Stockli, D.F., 2018, Insight into orogenic wedge evolution in the central Andes of southern Bolivia (21°S) from integration of thermochronology and thrust belt kinematics: Implications for Cordilleran cyclicity: South American Symposium on Isotope Geology, Cochabamba, Bolivia, July 22-25, 2018.
65. Fetrow, A.C., Snell, K.E., DiFiori, R., **Long, S.P.**, and Bonde, J.W., 2018, Basin evolution analysis of Newark Canyon Formation, Nevada: A reconstruction of

palustrine and lacustrine carbonate depositional environments: Rocky Mountain GeoBiology Symposium, Golden, CO, April 7.

64. **Long, S.P.**, 2018, New perspectives on the construction and extensional collapse of the Nevadaplano: A summary of recent progress (invited presentation): National Association of Geoscience Teachers 5th Biennial Structural Geology and Tectonics Forum.
63. **Long, S.P.**, 2017, A summary of recent progress on understanding the structural evolution and paleogeography of the Nevadaplano (invited presentation): Geological Society of America Abstracts with Programs, Vol. 49, No. 6, doi: 10.1130/abs/2017AM-301454.
62. **Long, S.P.**, and McQuarrie, N., 2017, Integration of geometry, kinematics, burial timing, and exhumation timing to understand 4-D thrust belt evolution: an example from the Himalayan orogen in Bhutan (invited presentation): Geological Society of America Abstracts with Programs, Vol. 49, No. 6, doi: 10.1130/abs/2017AM-301501.
61. **Long, S.P.**, Gordon, S.M., and Soignard, E., 2017, Large-scale, distributed structural thinning in the Himalayan orogen: a case study from central Bhutan: Geological Society of America Abstracts with Programs, Vol. 49, No. 6, doi: 10.1130/abs/2017AM-301530.
60. **Long, S.P.**, Gordon, S.M., Young, J.P., and Soignard, E., 2017, Temperature and strain gradients across the Main Central thrust in south-central Bhutan: implications for the origin of inverted metamorphism and the contribution of transport-parallel stretching to cumulative mass transfer: Geological Society of America Abstracts with Programs, Vol. 49, No. 6, doi: 10.1130/abs/2017AM-301512.
59. Stout, A.J.** , **Long, S.P.**, and Soignard, E., 2017, Extensional strain, contractional strain, and peak thermal conditions in the White Pine Range, eastern Nevada: insights from a structural reconstruction integrated with RSCM thermometry: Geological Society of America Abstracts with Programs, Vol. 49, No. 6, doi: 10.1130/abs/2017AM-305633.
58. Pianowski, L.S.* , Vervoort, J.D., **Long, S.P.**, and Gordon, S.M., 2017, Timing of metamorphism in the Main Central thrust zone in south-central Bhutan: insights from preliminary garnet and monazite geochronology: Geological Society of America Abstracts with Programs, Vol. 49, No. 6, doi: 10.1130/abs/2017AM-306954.
57. Anderson, R.B.* , **Long, S.P.**, Thomson, S.N., Calle, A.Z., Horton, B.K., and Stockli, D.F., 2017, Deformation history and wedge dynamics of the central Andes in southern Bolivia (~21°S): Insights from new apatite (U-Th)/He, apatite fission track, and zircon (U-Th)/He ages: Geological Society of America Abstracts with Programs, Vol. 49, No. 6, doi: 10.1130/abs/2017AM-304165.

56. Di Fiori, R.V.*, Long, S.P., Snell, K.E., Bonde, J., and Vervoort, J.D., 2017, Aptian-Albian deposition within an axially-drained syntectonic basin in the Sevier hinterland in north-central Nevada: insights from mapping and U-Pb geochronology from the Newark Canyon Formation in the Cortez Mountains: Geological Society of America Abstracts with Programs, Vol. 49, No. 6, doi: 10.1130/abs/2017AM-298693.
55. Starnes, J.K.*, **Long, S.P.**, Zhang, J., and Gordon, S.M., 2017, Using quartz petrofabric intensity parameters to delineate shear zones: a case study from the Main Central thrust in western Bhutan: Geological Society of America Abstracts with Programs, Vol. 49, No. 6, doi: 10.1130/abs/2017AM-297707.
54. Fetrow, A.C., Snell, K.E., **Long, S.P.**, and Bonde, J.W., 2017, A paleoclimatic record from the “Nevadaplano” during the Middle Cretaceous using stable isotopes and clumped isotope paleothermometry: Goldschmidt Abstracts, v. 2017, p. 1146.
53. **Long, S.P.**, and Walker, J.P., 2016, The Grant Range in eastern Nevada: a ‘proto’ core complex exhumed entirely by brittle, low-angle ($\leq 15^\circ$) detachment faults: Eos Trans., American Geophysical Union 97 (61), Fall Meet. Suppl., Abstract T21A-2795.
52. Di Fiori, R.V.*, **Long, S.P.**, Rafferty, K., Snell, K., and Bonde, J., 2016, Early Cretaceous, syn-contractonal deposition within the Sevier hinterland in central Nevada: preliminary insights from geologic mapping in the Diamond Mountains: Eos Trans., American Geophysical Union 97 (61), Fall Meet. Suppl., Abstract T51D-2970.
51. Starnes, J.K.*, **Long, S.P.**, Gordon, S.M., and Soignard, E., 2016, Peak metamorphic temperatures across the Main Central thrust and through Greater Himalayan rocks in western Bhutan: preliminary insights from Raman spectroscopy of carbonaceous material thermometry: Eos Trans., American Geophysical Union 97 (61), Fall Meet. Suppl., Abstract V33D-3150.
50. **Long, S.P.**, and Walker, J.P., 2016, A structural model for brittle detachment faulting in the central Grant Range and the Grant Canyon and Bacon Flat oil fields in Railroad Valley, eastern Nevada: AAPG Pacific Section and Rocky Mountain Section Joint Meeting, October 2-5, 2016, Las Vegas, NV.
49. Anderson, R.B.*, **Long, S.P.**, Horton, B.K., Calle, A.Z., and Ramirez, V., 2016, Retroarc crustal shortening and structural architecture of the Andean fold-thrust belt of southern Bolivia (21°S): Implications for kinematic development and crustal thickening of the central Andes: Geological Society of America Abstracts with Programs, Vol. 48, No. 7, doi: 10.1130/abs/2016AM-284079.

48. Anderson, R.B.*, **Long, S.P.**, Horton, B.K., Calle, A.Z., and Ramirez, V., 2016, Regional geologic map across the Andean retroarc fold-thrust belt of southern Bolivia: New insights on the Subandean Zone, Interandean Zone, and Eastern Cordillera at 21°S: Geological Society of America Abstracts with Programs, Vol. 48, No. 7, doi: 10.1130/abs/2016AM-285926. (**1st place, Geological Society of America Best Student Map Competition, 2016 Annual Meeting**)
47. Zamora, C., Gordon, S.M., **Long, S.P.**, Kylander-Clark, A., and McDonald, C., 2016, Exhumation and cooling history of Greater Himalayan rocks in the eastern Himalaya: a U-Pb and ⁴⁰Ar/³⁹Ar thermochronology study from central and eastern Bhutan: Geological Society of America Abstracts with Programs, Vol. 48, No. 7, doi: 10.1130/abs/2016AM-285232.
46. Gordon, S.M., Zamora, C., Kauffman, R., **Long, S.**, Agustsson, K., Gonzales-Clayton, B., and Kylander-Clark, A.R.C., 2016, Two-stage exhumation of Greater Himalayan rocks: P-T-t-D results from mid-crustal rocks of central and eastern Bhutan: Goldschmidt Abstracts, v. 2016, p. 974.
45. **Long, S.P.**, and Soignard, E., 2016, Shallow-crustal metamorphism during Late Cretaceous anatexis in the Nevadaplano: insights from a metamorphic field gradient through the upper crust, Grant Range, eastern Nevada, U.S.A.: Geological Society of America Abstracts with Programs, Vol. 48, No. 6, p. doi: 10.1130/abs/2016RM-276038.
44. **Long, S.P.**, Thomson, S.N., Reiners, P.W., and Di Fiori, R.V.*, 2015, The role of upper-crustal thickening in spatially-focusing synorogenic extension: a case study from the Late Cretaceous-Paleocene Nevadaplano: Eos Trans., American Geophysical Union 96 (60), Fall Meet. Suppl., Abstract T21B-2812.
43. Anderson, R.B.*, **Long, S.P.**, Ramirez, V., Horton, B.K., and Calle, A.Z., 2015, Crustal shortening and structural architecture of the Interandean and Subandean zones of southern Bolivia (21°S): constraints from a new balanced cross section: Eos Trans., American Geophysical Union 96 (60), Fall Meet. Suppl., Abstract T23A-2923.
42. Calle, A.Z., Horton, B.K., Anderson, R.B.*, and **Long, S.P.**, 2015, Late Cretaceous-Cenozoic evolution of the central Andean foreland basin system in the Eastern Cordillera to Subandean Zone, southern Bolivia: Eos Trans., American Geophysical Union 96 (60), Fall Meet. Suppl., Abstract T23A-2924.
41. Gordon, S.M., Kauffman, R., Gonzales-Clayton, B., **Long, S.**, and Kylander-Clark, A., 2015, Monazite growth from the Eocene to the Miocene: new interpretations of the metamorphic history of Greater Himalayan rocks in the eastern Himalaya: Eos Trans., American Geophysical Union 96 (60), Fall Meet. Suppl., Abstract V41A-3058.

40. **Long, S.P.**, and Walker, J.P., 2015, Flexural isostatic folding during brittle, low-angle detachment faulting, Grant Range, eastern Nevada: a long-duration 'fixed hinge': Geological Society of America Abstracts with Programs, Vol. 47, No. 7, p. 370.
39. **Long, S.P.**, 2015, Map pattern and style of regional-scale contractional deformation in the Sevier hinterland in eastern Nevada: insights from sub-volcanic paleogeologic maps: *in* Pennell, W.M., and Garside, L.J., eds., New Concepts and Discoveries: Geological Society of Nevada Symposium Program with Abstracts, May 2015, Sparks, Nevada, v. 1, p. 78-79.
38. Di Fiori, R.V.*, **Long, S.P.**, Muntean, J.L., and Edmondo, G.P., 2015, Structural analysis of gold mineralization in the southern Eureka mining district, Eureka County, Nevada: a predictive structural setting for Carlin-type mineralization: *in* Pennell, W.M., and Garside, L.J., eds., New Concepts and Discoveries: Geological Society of Nevada Symposium Program with Abstracts, May 2015, Sparks, Nevada, v. 1, p. 48-49.
37. **Long, S.P.**, 2014, A fold province in the hinterland of the Sevier orogenic belt in eastern Nevada: a Valley and Ridge in the Basin and Range: Eos Trans., American Geophysical Union 95 (59), Fall Meet. Suppl., Abstract T23A-4644.
36. Penfold, M.L.*, **Long, S.P.**, Gordon, S.M., Seward, G.G.E., Agustsson, K.S., and Zeiger, K.J., 2014, Deformation temperature, kinematics, and internal strain during emplacement of Greater Himalayan rocks in north-central and northeastern Bhutan: Eos Trans., American Geophysical Union 95 (59), Fall Meet. Suppl., Abstract T21B-4596.
35. Anderson, R.B.*, **Long, S.P.**, Horton, B.K., Calle, A.Z., and Stocki, D.F., 2014, New apatite and zircon (U-Th)/He constraints on the timing of thrust-related exhumation in the southern Bolivian (21°S) Andes: Eos Trans., American Geophysical Union 95 (59), Fall Meet. Suppl., Abstract T33B-4687.
34. Agustsson, K.M., Gordon, S.M., **Long, S.P.**, Seward, G.G.E., Zeiger, K.J., and Penfold, M.L.*, 2014, Flattening of the Greater Himalayan zone within the eastern Himalaya: insights from pressure–temperature–structural distance trends from central and eastern Bhutan: Eos Trans., American Geophysical Union 95 (59), Fall Meet. Suppl., Abstract T21B-4599.
33. Gordon, S.M., Kauffman, R., Gonzales-Clayton, B., Kylander-Clark, A., Agustsson, K., and **Long, S.P.**, 2014, Along-strike variations in the timing of melt crystallization and metamorphism across central and eastern Bhutan: new insights from LASS monazite geochronology and trace-element abundances: Eos Trans., American Geophysical Union 95 (59), Fall Meet. Suppl., Abstract T13D-03.
32. Di Fiori, R.V.*, **Long, S.P.**, Muntean, J.L., and Edmondo, G.P., 2014, Structural analysis of gold mineralization in the southern Eureka mining district, Nevada: a

predictive structural setting for Carlin-type gold deposits: Geological Society of America Abstracts with Programs, Vol. 46, No. 6, p. 462. (**2nd place, Geological Society of America Best Student Map Competition, 2014 Annual Meeting**)

31. Calle, A.Z., Horton, B.K., **Long, S.P.**, Anderson, R.B.*, and Ramirez, V., 2014, Shortening, exhumation, and sedimentation in the Andean thrust belt and foreland basin of southern Bolivia: Memorias del XXI Congreso Geológico Boliviano, Cochabamba, Bolivia, October 16-19, 2014.
30. Calle, A.Z., Horton, B.K., **Long, S.P.**, Ramirez, V., and Anderson, R.B.*, 2014, Shortening, exhumation, and sedimentation in the fold-thrust belt and foreland basin system of southern Bolivia: Actas del XIX Congreso Geológico Argentino (Eds. Martino, Lira, Guerreschi, Baldo, Franzese, Krohling, Manassero, Ortega, and Pinotti), p. 1572-1573, Cordoba, Argentina.
29. Agustsson, K.S., Gordon, S.M., **Long, S.P.**, Seward, G.G.E., Zeiger, K.J., and Penfold, M.L.*, 2013, Testing the channel flow model in the eastern Himalaya, eastern Bhutan: insights from preliminary thermobarometric data: Eos Trans., American Geophysical Union 94 (58), Fall Meet. Suppl., Abstract V51B-2651.
28. Zeiger, K.J., Gordon, S.M., **Long, S.P.**, Kylander-Clark, A., Agustsson, K., and Penfold, M.L.*, 2013, Testing the driving forces for exhumation of the Greater Himalayan Sequence in northeast Bhutan: implications of split-stream U-Pb zircon geochronology: Geological Society of America Abstracts with Programs, Vol. 45., No. 7, p. 797.
27. **Long, S.P.**, Henry, C.D., Muntean, J.L., Edmondo, G.P., and Cassel, E.J., 2013, Early Cretaceous construction and pre-late Eocene extensional collapse of a structural culmination, Eureka, Nevada: implications for out-of-sequence deformation in the Sevier hinterland: Geological Society of America Abstracts with Programs, Vol. 45., No. 7, p. 825.
26. **Long, S.P.**, McQuarrie, N., Tobgay, T., Coutand, I., Cooper, F.J., Reiners, P.W., Wartho, J., and Hodges, K.V., 2012, Variable shortening rates in the Bhutan thrust belt: implications for strain partitioning in the eastern Himalayan-Tibetan orogenic system: Eos Trans., American Geophysical Union 93 (57), Fall Meet. Suppl., Abstract T51F-2661.
25. **Long, S.P.**, 2011, Magnitude and spatial patterns of erosional exhumation in the Nevadaplano, eastern Nevada and western Utah: insights from a Paleogene paleogeologic map: Eos Trans., American Geophysical Union 92 (56), Fall Meet. Suppl., Abstract T11B-2314.
24. McQuarrie, N., **Long, S.P.**, Tobgay, T., and Nesbit, J.N., 2011, Documenting basin scale, geometry and provenance through detrital geochemical data: lessons from

Neoproterozoic to Ordovician strata of Bhutan: Eos Trans., American Geophysical Union 92 (56), Fall Meet. Suppl., Abstract T13F-2470.

23. Rodgers, D.W., and **Long, S.P.**, 2011, Creation and collapse of the northern Cache-Pocatello culmination, southeastern Idaho: Eos Trans., American Geophysical Union 92 (56), Fall Meet. Suppl., Abstract T11B-2313.
22. Corrie, S.L., Kohn, M.J., **Long, S.P.**, McQuarrie, N., and Tobgay, T., 2011, P-T data from central Bhutan imply distributed extensional shear at the Black Mountain “klippe”: Eos Trans., American Geophysical Union 92 (56), Fall Meet. Suppl., Abstract T21A-2307.
21. Lewis, R.S., Link, P.K., Stanford, L.R., and **Long, S.P.**, 2011, A new state geologic map of Idaho: Geological Society of America Abstracts with Programs, Vol. 43, No. 4, p. 84.
20. **Long, S.P.**, McQuarrie, N., Tobgay, T., Grujic, D., and Hollister, L., 2010, A new 1:500,000-scale geologic map of Bhutan: a detailed view of eastern Himalayan stratigraphy and structural geometry: Eos Trans., American Geophysical Union, 91(55), Fall Meet. Suppl., Abstract T43B-2176.
19. McQuarrie, N., **Long, S.P.**, Tobgay, T., Reiners, P., and Coutand, I., 2010, Tracking burial, displacement and exhumation in the Lesser Himalayas, eastern Bhutan: Eos Trans., American Geophysical Union, 91(55), Fall Meet. Suppl., Abstract T43B-2198.
18. Tobgay, T., McQuarrie, N., and **Long, S., P.**, 2010, Constraining age and rate of the Main Central Thrust displacement in western Bhutan: Eos Trans., American Geophysical Union, 91(55), Fall Meet. Suppl., Abstract T43B-2184.
17. **Long, S.P.**, McQuarrie, N., Tobgay, T., and Reiners, P.W., 2010, Preliminary timing constraints on Lesser Himalayan duplex development from zircon (U-Th)/He thermochronometry, eastern Bhutan: Geological Society of America Abstracts with Programs, Vol. 42., No. 5, p. 665.
16. McQuarrie, N., Leier, A., and **Long, S. P.**, 2010, Exhumation, subsidence, sedimentation and evacuation: linking surface processes to mantle geodynamics in the Andean plateau: Geological Society of America Abstracts with Programs, Vol. 42., No. 5, p. 183.
15. **Long, S.P.**, MQuarrie, N., and Tobgay, T., 2010, Internal strain and deformation temperature of Lesser Himalayan thrust sheets, Bhutan: *in* Leech, M.L., Klemperer, S.L., and Mooney, W.D., eds., Proceedings for the 25th Himalaya-Karakoram Tibet Workshop, San Francisco, California, U.S.A.: U.S. Geological Survey, Open-File Report 2010-1099, 2 p., <http://pubs.usgs.gov/of/2010-1099/long/>.

14. McQuarrie, N., and **Long S.P.**, 2010, Magnitude of strain in a low-grade Greater Himalayan section, central Bhutan: implications for channel flow: *in* Leech, M.L., Klemperer, S.L., and Mooney, W.D., eds., Proceedings for the 25th Himalaya-Karakoram Tibet Workshop, San Francisco, California, U.S.A.: U.S. Geological Survey, Open-File Report 2010-1099, 2 p., <http://pubs.usgs.gov/of/2010-1099/mcquarrie/>
13. Whynot, N., Grujic, D, **Long, S.**, and McQuarrie, N., 2010, Apparent temperature gradient across the Lesser Himalayan Sequence: Raman spectroscopy on carbonaceous material in the eastern Bhutan Himalaya: *in* Leech, M.L., Klemperer, S.L., and Mooney, W.D., eds., Proceedings for the 25th Himalaya-Karakoram Tibet Workshop, San Francisco, California, U.S.A.: U.S. Geological Survey, Open-File Report 2010-1099, 2 p., <http://pubs.usgs.gov/of/2010-1099/whynot/>
12. **Long, S.**, McQuarrie, N., Tobgay, T., and Grujic, D., 2009, Crustal shortening in the Himalayan fold-thrust belt, eastern and central Bhutan: *Eos Trans.*, American Geophysical Union, 90(54), Fall Meet. Suppl., Abstract T43C-2125.
11. Tobgay, T., McQuarrie, N., and **Long, S.**, 2009, Metamorphic grade of the Paro Formation, western Bhutan and its implications: *Eos Trans.*, American Geophysical Union, 90(54), Fall Meet. Suppl., Abstract T43C-2126.
10. **Long, S.P.**, and McQuarrie, N., 2009, Placing limits on channel flow: is central Bhutan STD-free?: *Geological Society of America Abstracts with Programs*, Vol. 41, No. 7, p. 586.
9. Dixon, I.T.E., Leier, A.L., McCartney, T., McQuarrie, N., and **Long, S.P.**, 2009, Exploring the relationship between upper crustal deformation, sedimentation, and surface uplift in the Altiplano of the Central Andes, Bolivia: *Geological Society of America Abstracts with Programs*, Vol. 41, No. 7, p. 657.
8. **Long, S.P.**, McQuarrie, N., Tobgay, T., Gehrels, G., and Grujic, D., 2008, Tectonostratigraphy of the Lesser Himalaya of Bhutan: Deducing the Paleostratigraphy of the Northern Indian Margin: *Eos Trans.*, American Geophysical Union, 89(53), Fall Meet. Suppl., Abstract T31E-07.
7. Tobgay, T., McQuarrie, N., Hollister, L., **Long, S.**, and Gehrels, G., 2008, The Paro Formation provenance and its tectonometamorphic history, Bhutan Himalaya: *Eos Trans.*, American Geophysical Union, 89(53), Fall Meet. Suppl., Abstract T15-2044.
6. **Long, S.P.**, McQuarrie, N., Tobgay, T., and Gehrels, G., 2007, Preliminary stratigraphy and structure of the Lesser Himalayan portion of the Himalayan fold-thrust belt, eastern Bhutan: *Eos Trans.*, American Geophysical Union, 88(52), Fall Meet. Suppl., Abstract T23D-1649.

5. Leier, A., **Long, S.P.**, and McQuarrie, N., 2006, Oligo-Miocene deposition along the eastern margin of the Altiplano plateau, Salla, Bolivia: *Eos Trans., American Geophysical Union*, 87(52), Fall Meet. Suppl., Abstract T33C-0527.
4. **Long, S.P.**, Leier, A., and McQuarrie, N., 2006, New Constraints on the Temporal and Spatial Evolution of the Central Andean Huarina Backthrust Belt South of La Paz, Bolivia: *Geological Society of America Abstracts with Programs*, Vol. 38, No. 7, p. 414.
3. **Long, S.P.**, Link, P.K., Janecke, S.U., Perkins, M.E., and Fanning, C.M., 2005, Multiple phases of tertiary extension and synextensional deposition in an evolving supradetachment basin, Malad Range, Southeast Idaho: *Geological Society of America Abstracts with Programs*, Vol. 37, No. 7, p. 204.
2. Janecke, S.U., Steely, A.N., Carney, S.J., and **Long, S.P.**, 2005, The Evolution of fold-prone supradetachment basins: examples of translation and breakup from Montana and SE Idaho: *Geological Society of America Abstracts with Programs*, Vol. 37, No. 7, p. 497.
1. **Long, S.P.**, Link, P.K., Rodgers, D.W., Janecke, S.U., and Perkins, M.E., 2004, Eocene to Recent normal faulting and syntectonic sedimentation, Henderson Creek quadrangle, Southeast Idaho: *Geological Society of America Abstracts with Programs*, Vol. 36, No. 4, p. 21.

C. Non-reviewed publications and contract reports:

3. **Long, S.**, and Rodgers, D., 2009, Chapter 1: Geology of the State of Idaho, *in* Winterfield, G.F., and Rapp, R.A., *Survey of Idaho Fossil Resources, Volume 1: Introduction to the Geologic History of Idaho*: BLM Professional Services Contract No. DLP050083, 64 p.
2. Geologic maps of the Rogers' Ruins, El Paso Canyon, and Surveyor's Canyon 7.5' quadrangles, Otero County, NM: New Mexico Bureau of Geology and Mineral Resources, Sacramento Mountains Mapping Project MWCD20. Published in: Newton, T., Timmons, S., Rawling, G., Frederick, P., Kludt, T., Land, L., Timmons, M., and Walsh, P., 2009, *Sacramento Mountains Hydrogeology Study*, New Mexico Bureau of Geology and Mineral Resources Open-File Report 518, 64 p., 2 plates.
1. Reports for Chevron Energy Technology Corporation, New Ventures Team, San Ramon, CA: 1) **Long, S.P.**, 2008, Tectonic and depositional setting of the upper Jurassic northern Tethyan margin; 2) **Long, S.P.**, 2008, Jurassic-Cretaceous tectonic and depositional setting of Egypt's Western Desert.

D. Ph.D. Dissertation:

Long, S.P., 2010, The evolution of eastern Himalayan deformation: geometry and kinematics of the Himalayan fold-thrust belt, eastern and central Bhutan [Ph.D. Dissertation]: Princeton, Princeton University, 475 p., 51 figures, 13 tables, 3 plates.

Advisor:

Nadine McQuarrie (Princeton)

Examining committee:

Lincoln Hollister (Princeton), Adam Maloof (Princeton), Chris Andronicos (Cornell)

E. M.S. Thesis:

Long, S.P., 2004, Geology of the Henderson Creek quadrangle, Oneida County, Idaho: multiple phases of Tertiary extension and deposition [Master's Thesis]: Pocatello, Idaho State University, 158 p., 31 figures, 3 tables, 2 plates.

Advisors and examining committee:

David Rodgers (Idaho State), Paul Link (Idaho State), Susanne Janecke (Utah State)

Invited talks:

25. January 7, 2018 – National Association of Geoscience Teachers 5th Biennial Structural Geology and Tectonics Forum: “Tectonics of Western North America: What’s New” session
Title: “*New perspectives on the construction and extensional collapse of the Nevadaplano: A summary of recent progress*”
24. November 9, 2017 – Washington State University, School of the Environment Geology Seminar Series
Title: “*Stretching, flattening, and thermally-inverting the Himalayan orogenic belt in Bhutan*”
23. October 25, 2017 – Geological Society of America annual meeting, Seattle, WA: “New Perspectives on Cordilleran Tectonics, Paleogeography, and Metallogeny” session.
Title: “*A summary of recent progress on understanding the structural evolution and paleogeography of the Nevadaplano*”
22. October 21, 2017 - Geological Society of America annual meeting, Seattle, WA: “Challenges in Tectonics 4: Planetary Evolution in Four Dimensions – The New Global Tectonics” session

Title: *“Integration of geometry, kinematics, burial timing, and exhumation timing to understand 4-D thrust belt evolution: an example from the Himalayan orogen in Bhutan”*

21. February 17, 2016 – University of Nevada, Las Vegas, Geoscience Department Seminar Series
Title: *“Creation and synorogenic collapse of a structural culmination in the Nevadaplano: Sevier giveth, gravity taketh away”*
20. January 29, 2016 – Central Washington University, Department of Geological Sciences, Seminar Series
Title: *“Creation and synorogenic collapse of a structural culmination in the Nevadaplano: Sevier giveth, gravity taketh away”*
19. September 14, 2015 – Utah State University, Department of Geology, Distinguished Speaker Series
Title: *“Creation and synorogenic collapse of a structural culmination in the Nevadaplano: Sevier giveth, gravity taketh away”*
18. September 11, 2015 – Washington State University, School of the Environment Geology Seminar Series
Title: *“Creation and synorogenic collapse of a structural culmination in the Nevadaplano: Sevier giveth, gravity taketh away”*
17. May 18, 2015 – Geological Society of Nevada 2015 Symposium: “Regional Geology and Metallogeny of the Great Basin” session
Title: *“Map pattern and style of regional-scale contractional deformation in the Sevier hinterland in eastern Nevada: insights from sub-volcanic paleogeologic maps”*
16. April 2, 2015 - Nevada Petroleum and Geothermal Society monthly meeting, Reno
Title: *“A newly-defined fold province in eastern Nevada: a Valley and Ridge in the Basin and Range”*
15. October 2, 2014 – Bhutan Department of Geology and Mines, Thimpu, Bhutan
Title: *“A summary of the 2012-2014 research of the University of Nevada, Reno group in eastern and central Bhutan”*
14. January 15, 2014 – University of Texas, Austin, Jackson School of Geosciences, Petrology, Geochemistry, Structure, & Tectonics talk series
Title: *“A record of shortening rates in the Himalayan thrust belt in Bhutan: integrating geochronology, thermochronology, deformation geometry, and kinematics”*
13. December 6, 2013 – University of Arizona Department of Geosciences weekly Cordilleran seminar

- Title: *“What can a mid-Tertiary unconformity tell us about deformation and erosion in the Nevadaplano?”*
12. December 5, 2013 – University of Arizona Department of Geosciences colloquium
Title: *“A record of shortening rates in the Himalayan thrust belt in Bhutan: integrating geochronology, thermochronology, deformation geometry, and kinematics”*
 11. November 21, 2013 – University of California, Berkeley, Department of Earth and Planetary Science department seminar
Title: *“A record of shortening rates in the Himalayan thrust belt in Bhutan: integrating geochronology, thermochronology, deformation geometry, and kinematics”*
 10. November 20, 2013 – University of California, Davis, Department of Earth and Planetary Science seminar series
Title: *“A record of shortening rates in the Himalayan thrust belt in Bhutan: integrating geochronology, thermochronology, deformation geometry, and kinematics”*
 9. May 2, 2013 - Nevada Petroleum and Geothermal Society monthly meeting, Reno, NV
Title: *“What can the mid-Tertiary unconformity tell us about deformation and erosion in the Nevadaplano?”*
 8. November 15, 2012 – California Institute of Technology, Division of Geological and Planetary Sciences, geology club seminar
Title: *“What can the mid-Tertiary unconformity tell us about deformation and erosion in the Nevadaplano?”*
 7. September 24, 2012 - University of Nevada, Reno, Department of Geological Sciences seminar series
Title: *“What can the mid-Tertiary unconformity tell us about deformation and erosion in the Nevadaplano?”*
 6. February 2, 2012 – Bhutan Department of Geology and Mines, Thimpu, Bhutan
Title: *“A summary of the work of the Princeton Group, 2007-2011, part 1: stratigraphy, depositional age constraints, and the new geologic map of Bhutan”*
 5. November 16, 2011 – University of Nevada, Las Vegas, Geoscience Department seminar series
Title: *“Spatial patterns of internal strain and deformation temperature in the Himalayan fold-thrust belt, Bhutan”*
 4. May 2, 2011 – University of Nevada, Reno, Department of Geological Sciences seminar series

- Title: “*Spatial patterns of internal strain and deformation temperature in the Himalayan fold-thrust belt, Bhutan: Implications for the development of strain in thrust sheets*”
3. March 9, 2011 – Idaho State University Department of Geosciences colloquium
Title: “*Spatial patterns of internal strain and deformation temperature in the Himalayan fold-thrust belt, Bhutan*”
 2. February 28, 2011 – Boise State University Department of Geosciences seminar
Title: “*Spatial patterns of internal strain and deformation temperature in the Himalayan fold-thrust belt, Bhutan*”
 1. November 4, 2010 – Nevada Petroleum Society monthly meeting, Reno, NV
Title: “*Constructing the Himalayan fold-thrust belt: a view from Bhutan*”

Funding awarded:

2017 - \$17,127 – USGS EdMap program, agreement no. G17AC00130

PI: Long (WSU)

Project title: Structural analysis of the McClure Spring syncline, Pancake Range, Nevada: characterizing the style and timing of contractional deformation in the Sevier hinterland.

2016 - \$596,788 – National Science Foundation Major Research Instrumentation program, EAR-1626670

PI: Jeffrey Vervoort (WSU), co-PI: John Wolff (WSU), **co-PI: Long** (WSU), co-PI Erin Thornton (WSU), co-PI Brian Kennedy (University of Idaho)

Project title: MRI: Acquisition of a laser-ablation, multi-collector ICP-MS for research and training in Earth, Environmental, and Anthropological Sciences.

2015 - \$117,000 – National Science Foundation Tectonics program, EAR-1524765

Lead PI: Kathryn Snell (UC-Boulder - \$141,010), **PI: Long** (WSU), PI: Joshua Bonde (UNLV - \$131,000)

Project title: Collaborative Research: The record of Early Cretaceous growth of the Nevadaplano from syn-orogenic deposits of the Sevier hinterland.

2014 - \$15,068 – Makoil, Inc.

PI: Long (UNR)

Project title: Analysis of the thermal history of the central Grant Range: testing models for development of Railroad Valley petroleum systems.

2013 - \$39,216 – USGS Statemap program, agreement no. G13AC00235

PI: Long (UNR)

Project title: Northern Grant Range mapping project: evaluating structural models for the Grant Canyon and Bacon Flat oil fields.

- 2013 - \$123,000 – National Science Foundation Tectonics program, EAR-1250510.
Lead PI: Long (UNR), PI: Brian Horton (UT-Austin - \$130,500)
Project title: Collaborative Research: Thrust belt response to rapid surface uplift of the Altiplano: A field test of Cordilleran cyclicity in southern Bolivia.
- 2012 - \$46,000 – Timberline Resources, Corporation
PI: Long (UNR)
Project title: Focused geologic mapping and structural analysis in the southern Eureka mining district: testing structural models of mineralization.
- 2012 - \$392,960 – National Science Foundation Tectonics program, EAR-1220300
Lead PI: Long (UNR), total split evenly with co-PI Stacia Gordon (UNR).
Project title: Did channel flow drive the thermo-mechanical evolution of the eastern Himalaya? A field-based test in northeast Bhutan.
- 2012 - \$14,317 – University of Nevada, Reno, College of Science
Lead PI: Long (UNR), co-PI Stacia Gordon (UNR).
Project title: Funding for purchase of mineral separation equipment.
- 2011 - \$61,213 – USGS Statemap program, agreement no. G11AC20244
Lead PI: Long (UNR), co-PI John Muntean (UNR), co-PI Chris Henry (UNR).
Project title: South Eureka mining district mapping project: understanding connections between tectonics, magmatism, and gold deposits.
- 2010 - \$45,000 - Timberline Resources, Corporation
Lead PI: Long (UNR), co-PI John Muntean (UNR), co-PI Chris Henry (UNR).
Project title: Geologic framework of the southern Eureka mining district.
- 2009 - \$2,310 – Geological Society of America graduate student research grant
PI: Long.
Project title: Convergence partitioning in the eastern Himalaya: the role of the Bhutan fold-thrust belt.

Awards:

- 2013 – Charles J. Mankin Memorial Award, for co-authorship on Geologic Map of Idaho
2010 – Arnold Guyot Teaching Award, Princeton University
2000 – NASA Space Grant for Idaho scholarship, The College of Idaho
2000 – Glenn D. Weed Memorial Scholarship, The College of Idaho
1999 – Ralph and Merle Kyle Mathematics Scholarship, The College of Idaho

Professional societies:

Geological Society of America (GSA): 2004-present

American Geophysical Union (AGU): 2006-present
Nevada Petroleum and Geothermal Society (NPGS): 2011-2015
Geological Society of Nevada (GSN): 2011-2015
American Association of Petroleum Geologists (AAPG): 2001

Teaching experience: 26 college semesters total

Washington State University: rank: associate professor

Summer 2019: SOE 408 – Field Geology (3 credits)
Spring 2019: SOE 210 – Earth’s History and Evolution (4 credits)
Fall 2018: SOE 542 – Extensional Tectonics (3 credits)
Summer 2018: GEOL 408 – Field Geology (3 credits)
Spring 2018: GEOL 340 – Structural Geology (4 credits)
Summer 2017: GEOL 408 – Field Geology (3 credits)
Spring 2017: GEOL 340 – Structural Geology (4 credits)
 GEOL 498/598 – Geology Seminar (1 credit)
Fall 2016: GEOL 541 – Orogenic Systems (3 credits)
Spring 2016: GEOL 340 – Structural Geology (4 credits)

University of Nevada, Reno: rank: assistant professor

Summer 2015: GEOL 451 – Summer Field Camp (6 credits) – served as Director
Summer 2014: GEOL 451 – Summer Field Camp (6 credits) – served as Director
Summer 2013: GEOL 451 – Summer Field Camp (6 credits) – served as Director
Summer 2012: GEOL 451 – Summer Field Camp (3 credits) – taught half of course
Spring 2012: GEOL 701A – Balanced Cross-Sections (2 credits)
Fall 2011: GEOL 731 – Orogenic Systems (3 credits)

Princeton University: rank: teaching assistant during Ph.D. program

Fall 2009: ENV 399 – Environmental Decision Making (1 credit)
 ENV 499 – Environmental Change, Poverty and Conflict (1 credit)
Spring 2009: GEO 210 – Earthquakes, Volcanoes, and Other Hazards laboratory (1
 credit, 2 sections)
Spring 2008: GEO 210 – Earthquakes, Volcanoes, and Other Hazards laboratory (1
 credit, 1 section)
Fall 2007: GEO 235 – The Physical Earth laboratory (1 credit, 1 section)

Idaho State University: rank: adjunct instructor

Spring 2006: GEOL 1101 – Physical Geology (3 credits)
 GEOL 1100 – Geology and Human Affairs (3 credits)
 GEOL g4409 – Remote Sensing laboratory (1 credit)
Fall 2005: GEOL 1101 – Physical Geology (3 credits)
 GEOL 1110 – Physical Geology laboratory (1 credit, 2 sections)
 GEOL g4402 – Geomorphology laboratory (1 credit)
Summer 2005: GEOL 1100 – Geology and Human Affairs (3 credits)

Idaho State University: rank: teaching assistant during M.S. program

Spring 2004: GEOL 1110 – Physical Geology laboratory (1 credit, 1 section)
GEOL 4421 – Structural Geology laboratory (1 credit)

Spring 2003: GEOL 1110 – Physical Geology laboratory (1 credit, 2 sections)
GEOL 4421 – Structural Geology laboratory (1 credit)

Fall 2002: GEOL 1110 – Physical Geology laboratory (1 credit, 3 sections)

University of Idaho: rank: teaching assistant during undergraduate work

Spring 2002: GEOL 101L - Physical Geology laboratory (1 credit, 2 sections).

Courses designed and taught:

Undergraduate level:

Physical geology (ISU GEOL 1101): This course will address several grand challenges of Earth science, including the need to better understand biogeochemical cycles, the rock cycle, climate change, the hydrologic cycle, and renewable and non-renewable resources. One of the main objectives is that students develop a general understanding of the scientific process that will then be used to evaluate human interactions with the natural world. Students will become familiar with many Earth science terms, concepts, and methods, and will be required to perform basic research and simple scientific procedures, including gathering data, organizing information, and communicating what they have learned through written work. This process will enhance critical thinking, logic and communications and discussion skills useful to multiple disciplines.

Earth's History and Evolution (WSU SOE 210): This course will provide an overview of the origins and evolution of Earth and its life-forms over geologic time, by teaching how the science of Geology has been applied to the study of the rock and fossil record. We will cover topics including the origins of the solar system, plate tectonics, and the atmosphere and oceans, as well as an introduction to geologic time, absolute and relative dating methods, principles of stratigraphy, and interpretation of the fossil record. By the end of this course students should have a good understanding of the basics of the scientific process of inquiry, the requirements and limitations of scientific theories, and a full appreciation of the true magnitude of geologic time.

Structural geology (WSU GEOL 340/SOE 340): Over geologic time scales, due to the application of stresses, Earth materials such as rocks deform through a variety of processes, at scales that range from submicroscopic to regional. This course presents a thorough examination of the mechanisms by which Earth materials deform, and the geologic structures that result from this deformation. An understanding of structural geology is fundamental to multiple geologic fields, including exploration for natural resources such as oil, gas, coal, and precious metals, exploration for groundwater and geothermal energy resources, and evaluation and mitigation of natural geologic hazards.

Field geology (WSU GEOL 408/UI GEOL 490/UNR GEOL 451): Through a series of field-based exercises, students will learn new skills and integrate knowledge gained through their previous coursework in order to understand complex geologic field relations in three dimensions. The focus of this course is to master advanced field skills, including note taking, lithologic description, measurement of planar and linear features, structural analysis, and geologic mapping. Students will synthesize real-world data that they collected, in order to generate geologic maps, illustrate the geometries of deformed rocks using cross-sections, and produce descriptive and interpretive written reports. This course is enhanced by the spectacular geologic setting of the Dillon, MT, region.

Graduate level:

Orogenic Systems (WSU GEOL 541/UNR GEOL 731): Orogenic belts are the result of contractional deformation at convergent plate margins, which produces the thickest crust and highest elevations on Earth. Much of this deformation is accommodated through formation of fold-thrust belts, which can accommodate 100's of km of crustal shortening. An understanding of the geometry, kinematics, and dynamics of fold-thrust belts is critical to the study of compressional tectonics. In addition, because fold-thrust belts and associated foreland basin systems host a large percentage of the world's oil, gas, and coal, understanding orogenesis is critical to the hunt for natural resources. The purpose of this class is to gain an understanding of orogenesis by undergoing a semester-long case study on the North American Cordillera. Key to this goal will be a week-long field trip, organized as a transect through the frontal thrust belt in Alberta.

Extensional tectonics (WSU SOE 542): Tectonic extension is accommodated by normal faults and normal-sense shear zones, which work together to thin and elongate the upper and lower crust, respectively. An understanding of the geometry and dynamics of how these structures act to thin the crust is critical to the study of tectonics. Also, because normal faults form primary conduits for fluid flow and mineralization, an understanding of extensional tectonics is fundamental to the hunt for natural resources. In this course, we will undergo a semester-long case study on the Basin and Range province in Nevada and Utah (includes a week-long field trip), the world's finest active extensional province.

Teaching evaluations summary table: (all metrics are out of a maximum possible value of 5.00)

| Term | University | Course | Course title | Instructor overall | Course quality | Explanations/ examples | Available/ approachable | Knowledge/ enthusiasm | n |
|----------|------------|--------------|--------------------|--------------------|----------------|------------------------|-------------------------|-----------------------|----|
| FA 2011 | UNR | GEOL 731 | Orogenic Systems | 4.83 | - | 4.50 | 4.75 | - | 6 |
| SPR 2013 | UNR | GEOL 451 | Summer Field Camp | 4.25 | - | 4.25 | - | - | 20 |
| SUM 2014 | UNR | GEOL 451 | Summer Field Camp | 4.71 | - | 4.39 | - | 4.74 | 20 |
| SUM 2015 | UNR | GEOL 451 | Summer Field Camp | 4.69 | - | 4.67 | - | 4.67 | 16 |
| SPR 2016 | WSU | GEOL 340 | Structural Geology | 4.67 | - | 4.67 | 4.67 | 4.89 | 9 |
| FA 2016 | WSU | GEOL 541 | Orogenic Systems | 4.89 | - | 4.67 | 5.00 | 4.78 | 9 |
| SPR 2017 | WSU | GEOL 340 | Structural Geology | 4.80 | 4.80 | 4.90 | 4.90 | 5.00 | 10 |
| SPR 2017 | WSU | GEOL 498/598 | Geology Seminar | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 7 |
| SUM 2017 | WSU | GEOL 408 | Field Geology | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 8 |
| SUM 2017 | UI | GEOL 490 | Field Geology II | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 11 |
| SPR 2018 | WSU | GEOL 340 | Structural Geology | 5.00 | 5.00 | 4.90 | 5.00 | 5.00 | 13 |
| SUM 2018 | WSU | GEOL 408 | Field Geology | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 3 |

Graduate mentoring experience:

2018-: Primary advisor to Nolan Blackford (WSU Ph.D. student – degree in progress).

2016-: Primary advisor to Jesslyn Starnes (WSU Ph.D. student – degree in progress).

2016-: Primary advisor to Russell Di Fiori (WSU Ph.D. student – degree in progress).

2015-2018: Co-advisor to Laura Pianowski (WSU M.S. student, completed 2018).

Thesis: Pianowski, L.S., 2018, Timing of metamorphism in the Main Central thrust zone in south-central Bhutan: Insights from garnet and monazite geochronology [Master's Thesis]: Pullman, Washington State University, 78 p. 12 figures.

2013-: Primary advisor to Ryan Anderson (WSU Ph.D. student – degree in progress).

2012-2014: Primary advisor to Melissa Penfold (UNR M.S. student, completed 2014).

Thesis: Penfold, M.L., 2014, Microstructural analysis of Greater Himalayan rocks in northern Bhutan [Master's Thesis]: Reno, University of Nevada, 93 p., 23 figures.

2012-2014: Primary advisor to Russell Di Fiori (UNR M.S. student, completed 2014).

Thesis: Di Fiori, R.V., 2014, Focused geologic mapping and structural analysis of the southern Eureka mining district; assessing structural controls and spatial patterns of mineralization [Master's Thesis]: Reno, University of Nevada, 71 p., 14 figures, 1 plate.

Undergraduate mentoring experience:

2017-: Senior thesis advisor to Kimberly Kramer (WSU B.S. student).

2017-: Senior thesis advisor to Connor Mullady (WSU B.S. student).

2016-2017: Senior thesis advisor to Austin Stout (WSU B.S. student, completed 2017).

Thesis: Extensional strain, contractional strain, and peak thermal conditions in the White Pine Range, eastern Nevada: insights from a structural reconstruction integrated with RSCM thermometry [Senior thesis]: Pullman, Washington State University, 19 p., 5 figs.

2009: Mentor for Chris Hepburn (Princeton undergraduate) Junior Independent Work Paper: “The internal strain and deformation of Bhutan”

2008: Mentor for Natasha Lavdovsky (Princeton undergraduate) Junior Independent Work Paper: “Finite strain in the Pennsylvania Appalachians”

Service:

Journal editing:

2015-present: Associate Editor, American Geophysical Union journal *Tectonics*.

Graduate student committees:

2018-: Ross Salerno (WSU Ph.D.) – degree in progress

2017-: Chris Brown (WSU Ph.D.) – degree in progress

2017: Shaina Cohen (Boise State University Ph.D.)

2017: Gilbert Ching (WSU M.S.)

2016-: Austin Green (WSU Ph.D.) – degree in progress

2016-: Da Wang (WSU Ph.D.) – degree in progress

2016-: Clay McDonie (WSU M.S.) – degree in progress

2016-: Andrew Canada (University of Idaho Ph.D.) – degree in progress

2016-: Daniel Gurganus (WSU M.S.) – degree in progress

2016-2017: Somiddho Bosu (University of Alabama M.S.)

2016-2017: Alex Johnson (WSU M.S.)

2014-2016: Carolina Zamora (UNR M.S.)

2014-2016: Jesse Walters (Boise State University M.S.)

2012-2015: Gwen Linde (UNR Ph.D.)

2012-2014: Kenjo Agustsson (UNR M.S.)

2012-2014: Kate Zeiger (UNR M.S.)

2012-2013: Kyle Gray (UNR M.S.)

2011-2014: Jack Rigsbee (UNR M.S.)

2010-2012: Jonathan Payne (UNR M.S.).

Department-level committees:

2018: WSU School of the Environment microprobe technician search committee

2017-2018: WSU School of the Environment geology revitalization committee (chair)

2016-2017: WSU School of the Environment geology revitalization committee

2015-2016: WSU School of the Environment undergraduate studies committee

2015: UNR NBMG neotectonic geologist faculty search committee

2014: UNR NBMG economic geologist faculty search committee

2013: UNR NBMG personnel committee

2012-2013: UNR DGSE geological engineering faculty search committee (2 positions)
2012: UNR NBMG personnel committee
2011-2012: UNR DGSE geological engineering faculty position search committee

University-level committees:

2013-2014: UNR College of Science instrumentation committee

Other committees:

2018-: Washington Geological Survey STATEMAP advisory committee
2016-: Idaho Geological Survey geological mapping advisory committee

Article and proposal reviewing:

2018: 1 journal article (GSA Bulletin), 3 proposals (NSF Tectonics, Graduate Women in Science)
2017: 5 journal articles (Gondwana Research, G-Cubed, Journal of Structural Geology, Palaeogeography-Palaeoclimatology-Palaeoecology, GSA field trip guide) and 3 proposals (NSF Tectonics, ACS-PRF)
2016: 3 journal articles (Geology, Tectonics, Geosphere) and 1 proposal (NSF Tectonics)
2015: 5 journal articles (Earth and Planetary Science Letters, Tectonics, International Journal of Earth Sciences, Rocky Mountain Geology, Geological Society of Nevada) and 1 proposal (American Chemical Society-Petroleum Research Fund)
2014: 8 journal articles (Tectonics, Earth and Planetary Science Letters, Precambrian Research, Terra Nova) and 1 proposal (NSF Tectonics)
2013: 5 journal articles (GSA Bulletin, Tectonics, Precambrian Research, Journal of Maps) and 3 proposals (NSF Geophysics, NSF Tectonics)
2012: 5 journal articles (Geology, Tectonics, Journal of Maps)
2011: 1 proposal (NSF Tectonics)

Conference session chairing:

2015: Co-chair of “Regional Geology” session at the Geological Society of Nevada Symposium, Reno, NV
2014: Co-chair of “Mesozoic Paleogeography of the North American Cordillera” session at the Joint Rocky Mountain/Cordilleran Geological Society of America meeting, Bozeman, MT

Other:

2017-: Registered Student Organization faculty advisor, WSU Geology Club
2014: Attended UNR DGSE retreat “Building Strong Departments”
2013-2015: Director, University of Nevada, Reno, Summer Field Camp

Field work:

| | |
|---------------------------|---|
| July-Aug, 2018 (3 weeks) | Ladakh, northwestern Indian Himalaya |
| March-Aug, 2017 (3 days): | Salmon River Suture Zone, western Idaho |
| Aug., 2017 (1 week): | Diamond, Fish Ck., and Pancake Ranges, eastern Nevada |
| Oct., 2016 (3 weeks): | Eastern Himalaya, Bhutan |

| | |
|-----------------------------|---|
| July, 2016 (1 week): | Diamond and Fish Creek Ranges, eastern Nevada |
| Oct., 2014 (3 weeks): | Eastern Himalaya, Bhutan |
| Sept.-Nov., 2013 (5 weeks) | Grant Range, eastern Nevada |
| July-Aug., 2013 (3 weeks) | Central Andes, Bolivia |
| Feb.-Mar., 2013 (4 weeks) | Eastern Himalaya, Bhutan |
| May-Sept., 2012 (5 weeks) | Diamond and Fish Creek Ranges, eastern Nevada |
| Feb.-Mar., 2012 (5 weeks) | Eastern Himalaya, Bhutan |
| June-Aug., 2011 (9 weeks) | Diamond and Fish Creek Ranges, eastern Nevada |
| Oct., 2010 (1 week) | Diamond and Fish Creek Ranges, eastern Nevada |
| April-May, 2010 (9 weeks) | Eastern Himalaya, Bhutan |
| Sept.-Nov., 2008 (13 weeks) | Eastern Himalaya, Bhutan |
| Aug., 2007 (3 weeks) | Gardner Canal, British Columbia Coast Range |
| April-June, 2007 (12 weeks) | Eastern Himalaya, Bhutan |
| July-Aug., 2006 (4 weeks) | Sacramento Mountains, southern New Mexico |
| June, 2006 (3 weeks) | Central Andes, Bolivia |
| Sept.-Oct., 2005 (2 weeks) | Bannock Range, southeast Idaho |
| June-Oct., 2003 (9 weeks) | Malad Range, southeast Idaho |