

BETHANY T. NEILSON

Associate Professor
Civil and Environmental Engineering
Utah Water Research Laboratory
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EDUCATION

Ph.D. 2006 Utah State University, Logan, Utah: Civil and Environmental Engineering

M.S. 2001 Utah State University, Logan, Utah: Civil and Environmental Engineering

B.S. 1998 Utah State University, Logan, Utah – May 1998: Environmental Engineering

ACADEMIC EXPERIENCE

2014-current: Associate Professor, Civil and Environmental Engineering, Utah Water Research Laboratory, Utah State University, Logan, UT.

2014 (Fall): IGN Fellow, University of Copenhagen, Department of Geosciences and Natural Resource Management, Copenhagen, Denmark

2008-2014: Assistant Professor, Civil and Environmental Engineering, Utah Water Research Laboratory, Utah State University, Logan, UT.

2006 – 2007: Research Assistant Professor, Utah Water Research Laboratory, Utah State University, Logan, UT.

2001-2006: Research Engineer, Utah Water Research Laboratory, Utah State University, Logan, UT.

2002 (summer): Research Scientist, Under Dr. Steven C. Chapra, Tufts University, Medford, MA.

2000: Research Technician, Utah Water Research Laboratory, Utah State University, Logan, UT.

1998-2000: Graduate Research Assistant, Utah State University, Logan, UT.

Expertise:

My research and teaching focuses on heat and mass transport in natural systems. I believe that an understanding of natural systems requires field data. Therefore, my research is primarily focused on the collection of data sets fundamental to numerical modeling and identification of dominant fate and transport mechanisms. Much of my research has focused on quantifying groundwater/surface water interactions and the associated influences on instream water quality and temperature regimes. These efforts have spanned desert rivers, arctic river systems, low gradient agricultural rivers, and high gradient mountain streams. More recently, my research efforts have expanded to landscape processes and connections to riverine environments. My current research focuses on understanding the role of groundwater/surface water exchanges on instream temperatures and carbon fluxes in areas of continuous permafrost; groundwater exchanges throughout continuous permafrost landscapes and their controls on carbon and nitrogen delivery to streams and rivers; groundwater exchanges and influences on longitudinal solute trends in karst mountainous watersheds; instream temperature, nutrient, and habitat responses to the development of beaver dam complexes; and groundwater/surface water exchange influences on heat and nutrient transport in highly regulated river reaches.

AWARDS

- USU College of Engineering Undergraduate Student Mentor of the Year Award 2017
- USU Civil and Environmental Engineering Undergraduate Student Mentor of the Year Award 2017
- USU College of Engineering Graduate Student Mentor of the Year Award 2016
- USU Civil and Environmental Engineering Graduate Student Mentor of the Year Award 2016
- University of New South Wales Visiting Researcher Travel Grant 2015

- University of Copenhagen IGN International Academy Recipient 2014
- USU College of Engineering Graduate Student Mentor of the Year Award 2014
- USU Civil and Environmental Engineering Graduate Student Mentor of the Year Award 2014
- USU Civil and Environmental Engineering Researcher of the Year Award 2013
- UCOWR Ph.D. Dissertation Award in Natural Sciences and Engineering 2007
- Outstanding Student Paper - AGU Fall Conference 2005
- Graduate Assistance in Areas of National Need (GAANN) Fellowship 2003-2006
- USU Graduate Research Assistantship 1998-2001

CURRENT/RECENT RESEARCH PROJECTS

Current Projects

- Logan River Observatory State Appropriation Funds (Utah Division of Water Resources); \$450,000; 2019-2024 (PI).
- Future of the Colorado River Basin (Walton Family Foundation); \$221,000; 2018-2020 (Co-PI).
- Monitoring and Research for Water Quality and Stormwater Management in Logan City, UT (Logan City); \$164,703; 2018-2019 (PI).
- Improving representation of environmental objectives in systems models to inform integrated water management strategies. (USGS 104(b)/UWRL); \$89,584; 2018-2020 (Co-PI).
- LTER: The Role of Biogeochemical and Community Openness in Governing Arctic Ecosystem Response to Climate Change and Disturbance. (NSF); 2017-2023 (Senior Personnel).
- Impacts of beaver dams on stream hydrology, temperature, and geomorphology within Curtis Creek, Utah. (USFS), \$37,500; 2016-2019 (PI).
- Estimating Groundwater Influences in Northern Utah Streams and Rivers (UWRL); \$162,575; 2015-2020 (PI).
- Collaborative Research: The effects of river regulation on lateral and integrated longitudinal mass and energy transfers in coupled terrestrial-aquatic systems (NSF – 1343861); \$625,732; 2014-2019 (PI).

Completed Projects

- Understanding the variability of recharge and groundwater control on mountainous stream discharge in karst environments. (USGS 104(b)/UWRL); \$73,003; 2018-2019 (Co-PI).
- Mapping Didymosphenia in the Logan River Drainage. (USGS 104(b)/UWRL); \$98,566; 2017-2019 (Co-PI).
- Quantification of Groundwater Influences in High Gradient Utah Streams and Rivers (USGS 104(b)/UWRL); \$17,054; 2016-2018 (PI).
- Collaborative Research: Quantification of Dominant Heat Fluxes in Streams and Rivers in the Arctic (NSF - 1204220); \$984,000; 2012-2018 (PI).
- iUTAH - Urban Transitions and Aridregion Hydro-sustainability (NSF-1208732); \$20,000,000; 2012-2018 (Senior Personnel).
- Evaluation of Optimal Methods for Measuring Nitrogen Transformation Rates in Utah Streams (Utah Division of Water Quality, Utah Dept of Environmental Quality), 2015-2018 (Advisory).
- Incorporation of Heat into Solute Transport Models (UWRL); \$296,340; 2009-2016 (PI).
- Investigating hydraulic and thermal characteristics in and around complex habitat structures in the Lower San Rafael River, South Central Utah (UWRL/DWR); \$56,924/\$20,000; 2014-2015 (Co-PI).
- Capturing Aerial Imagery on the San Rafael River, Utah, Using an Unmanned Aerial Vehicle (UAV) to Monitor and Assist in Evaluating Restoration Efforts (USGS 104(b)/UDWR/UWRL); \$160,405; 2013-2014 (Co-PI).
- Influence of Groundwater/Surface Water Interactions in High Gradient Mountain Streams (USGS/UWRL); \$95,858; 2014-2015 (PI).

- QUAL2Kw Modeling for Numeric Nutrient Criteria (Utah DEQ); \$33,655; 2013 (PI).
- TZTS Model Adaptation and Application to Quantify the Influences of Pah Tempe Hot Springs Removal (Washington County Water Conservancy District); \$10,365; 2012-2013 (PI).
- Hydrologic and Ecological Impacts of Changes in Human Water Resource Management (NSF-1038973); \$149,943; 2010-2012 (Co-PI).
- Temperature Modeling and Analysis within the Jordan River in Salt Lake County, UT (Utah DEQ); \$31,462; 2010-2012 (PI).
- Modeling the Impacts of WWTP Effluents on Receiving Waters in Utah Using QUAL2K (Utah DEQ); \$90,074; 2010-2012 (PI).
- Comparison of Data Collection Approaches using Different Technologies and Modeling – Water Quality Monitoring (USU/UWRL); \$68,174; 2009-2010 (PI).
- Development of Technology for Streambed Thermal Property Instrument (SPI) - Part 1 and 2 (USU/UWRL); \$95,000; 2009-2010 (Co-PI).
- Understanding Processes Affecting Instream Temperatures in the Arctic (Inland Northwest Research Alliance); \$79,986; 2009-2010 (PI).
- Salt Lake County Watershed Water Quality Modeling (Stantec Consulting/Salt Lake County); \$12,961; 2009-2010 (PI).
- Comparison of Data Collection Approaches using Different Technologies and Modeling Techniques to Determine Surfacewater/Groundwater Interactions – Analysis and Modeling (USU/UWRL); \$50,324; 2008-2009 (PI).
- EPA Targeted Watersheds Grant and Extension (US EPA/Bear River Commission); \$140,000; 2008-2009 (Co-PI).
- Understanding Native Fishes Behavior Patterns During Periods of High Turbidity in the Virgin River (Washington County Water Conservancy District/Virgin River Program); \$22,134; 2008-2009 (PI).
- Two-Zone Temperature and Solute Data Collection and Modeling on Curtis Creek to Understand the Role of Groundwater/Surface Water Interactions on Instream Temperatures in High-Gradient Mountain Streams (USU/New Faculty Research Grant); \$14,978; 2008-2009 (PI).
- Two-Zone Temperature and Solute Model Testing and Development in the Bear River Basin (Curtis Creek), UT (USU/UWRL); \$35,000; 2007-2009 (PI).
- Iraqi Agricultural Extension Revitalization Program; \$969,138; 2007-2011 (Co-PI).
- Incorporation of Thermal Imaging into the Data Collection Methodology for Two-Zone Temperature and Solute Modeling (Washington County Water Conservancy District/Virgin River Program); \$10,842; 2007-2008 (PI).
- Two-Zone Temperature and Solute Model Testing and Development in the Virgin River (USGS); \$64,122; 2007-2008 (PI).
- Interdisciplinary Surface Water Quality Modeling Course (USU Water Initiative); \$19,960; 2007-2008 (PI).

PEER REVIEWED PUBLICATIONS

Refereed Journal Articles:

*=Neilson Post-Doctoral Researcher, ** = Neilson Graduate Student, *** = Neilson Undergraduate Student
 += Post-Doctoral Researcher, ++ = Graduate Student, +++ = Undergraduate Student

47. Majerova*, M., **B.T. Neilson**, B. Roper. 2019. "Beaver dam influences on streamflow hydraulic properties and thermal regimes." *Science of the Total Environment*. In press.
46. King**, T.V., D.L. Kane, L.D. Overbeck⁺⁺, **B.T. Neilson**. 2019. "A distributed analysis of lateral inflows in an Alaskan Arctic watershed underlain by continuous permafrost." *Hydrological Processes*. In press.

45. Tarboton, D.G, C. Richards, M. McKee, A. Torres-Rua, **B.T. Neilson**, B.P. Tullis, D.E. Rosenberg, D.K. Stevens, J.S. Horsburgh, J.E. McLean, M.C. Johnson, R.R. Dupont. 2019. "The Utah Water Research Laboratory: Empowering Water and Environmental Research in Utah and Around the World." *Water Resources Impact, American Water Resources Association*. 21:5, 13-15.
44. Ferencz, S.B. ++, M.B. Cardenas, **B.T. Neilson**. 2019. "The extensive effects of dam water release properties and ambient groundwater flow on surface water-groundwater exchange: a combined longitudinal and transverse analysis." *Water Resources Research*. 55. <https://doi.org/10.1029/2019WR025210>.
43. O'Connor, M. T. ++, M.B. Cardenas, **B.T. Neilson**, D. Nicholaides+++ , G.W. Kling. 2019. "Active layer groundwater flow: The interrelated effects of stratigraphy, thaw, and topography." *Water Resources Research*. 55. <https://doi.org/10.1029/2018WR024636>.
42. Dzara++ , J. R., B.T. Neilson, and S.E. Null. 2019. "Quantifying thermal refugia connectivity by combining temperature modeling, distributed temperature sensing, and thermal infrared imaging." *Hydrology and Earth System Sciences*. 23, 2965-2982. <https://doi.org/10.5194/hess-23-2965-2019>.
41. Li++ , A, A. Aubeneau, T. King** , R. Cory, **B.T. Neilson**, D. Bolster, A. Packman. 2019. "Effects of vertical hydrodynamic mixing on photomineralization of dissolved organic carbon in arctic surface waters." *Environmental Science: Processes and Impacts*. 21, 748-760. <http://dx.doi.org/10.1039/C8EM00455B>.
40. Buahin* C.A., J.S. Horsburgh, **B.T. Neilson**. 2019. "Parallel multi-objective calibration of a component-based river temperature model." *Environmental Modelling & Software*. 116, 57-71. <https://doi.org/10.1016/j.envsoft.2019.02.012>.
39. King, T.V. ** and **B.T. Neilson**. 2019. "Quantifying Reach-Average Effects of Hyporheic Exchange on Arctic River Temperatures in an Area of Continuous Permafrost." *Water Resources Research*. 55, 1951– 1971. <https://doi.org/10.1029/2018WR023463>.
38. **Neilson, B.T.**, H. Tennant***, T.L. Stout**, Miller, M., Gabor+, R.S., Y. Jameel++, M. Millington++, A. Gelderloos++, G.J. Bowen, P.D. Brooks. 2018. "Stream-centric methods for determining groundwater contributions in karst mountain watersheds." *Water Resources Research*. 54, 6708-6724. <https://doi.org/10.1029/2018WR022664>.
37. **Neilson, B.T.**, M.B. Cardenas, M.T. O'Connor++, M.T. Rasmussen***, T.V. King**, G.W. Kling. 2018. "Groundwater transport and exchange controls stream chemistry in permafrost terrain." *Geophysical Research Letters*. 45, 7596-7605. <https://doi.org/10.1029/2018GL078140>.
36. Müller++, S., S. Jessen, C. Duque+, E. Sebok+, **B.T. Neilson**, P. Engesgaard. 2018. "Assessing seasonal flow dynamics at a lagoon saltwater-freshwater interface using a dual tracer approach" *Journal of Hydrology Regional Studies*. 17, 24-35. <https://doi.org/10.1016/j.ejrh.2018.03.005>.
35. Watson++, J.A., M.B. Cardenas, S.B. Ferencz++, P.S. Knappett, and **B.T. Neilson**. 2018. "Thermal dynamics of a riparian aquifer and lateral hyporheic zone subject to flooding." *Hydrologic Processes*. 32(9), 1267-1281. <https://doi.org/10.1002/hyp.11504>.
34. King ** T.V., **B.T. Neilson**, M.T. Rasmussen ***. 2018. "Estimating discharge in low order rivers with high resolution aerial imagery." *Water Resources Research*. 54, 863-878. <https://doi.org/10.1002/2017WR021868>.
33. Shuai++, P., P.P.S. Knappett, M.B. Cardenas, S. Ferencz++, B.T. Neilson. 2017. "Denitrification in the banks of fluctuating rivers: The effects of river stage amplitude, sediment hydraulic conductivity and dispersivity, and ambient groundwater flow." *Water Resources Research*. 53, 7951–7967. <https://doi.org/10.1002/2017WR020610>.
32. Gabor+, R.S., S.J. Hall, Y. Jameel++, M.L. Barnes**, T.L. Stout**, H. Tennant***, M. Millington++, A. Gelderloos++, D. Eiriksson, **B.T. Neilson**, G.J. Bowen, P.D. Brooks. 2017. "Persistent urban impacts on surface water quality mediated by stormwater recharge." *Environmental Science and Technology*. 51(17), 9477–9487. <https://pubs.acs.org/doi/10.1021/acs.est.7b00271>.
31. Niswonger, R., R. Naranjo, D. Smith, J. Constantz, K. Allander, D. Rosenberry, **B.T. Neilson**, M. Rosen, D. Stonestrom. 2017. "Nutrient Processes at the Stream-Lake Interface for a Channelized vs. Unmodified Stream

- Mouth: Implications for Cultural-Climatic Eutrophication in a Sub-Alpine Setting.” *Water Resources Research*. 53, 237–256. <https://doi.org/10.1002/2016WR019538>.
30. Stout**, T.L., M. Majerova*, **B.T. Neilson**. 2017. “Impacts of beaver dams on channel hydraulics and substrate characteristics in a mountain stream.” *Ecohydrology*. 10:1 (e1767). <https://doi.org/10.1002/eco.1767>.
 29. King** T.V., **B.T. Neilson**, L.D. Overbeck**, D.L. Kane. 2016. “Water temperature controls in low arctic rivers.” *Water Resources Research*. 52, 4358-4376. <https://doi.org/10.1002/2015WR017965>.
 28. Constantz, J., Naranjo, R., Niswonger, R., Allander, K., **Neilson, B.T.**, Rosenberry, D., Smith, D., Zamora, C., Stonestrom, D. 2016. “Water and heat exchanges near natural vs. channelized stream mouths.” *Water Resources Research*. 52, 2157-2177. <https://doi.org/10.1002/2015WR017013>.
 27. Schmadel**, N. M., J. Heavilin, **B.T. Neilson**, A. Wörman. 2016. “Isolating parameter sensitivity in reach scale transient storage modeling.” *Advances in Water Resources*. 89, 24-31. <https://doi.org/10.1016/j.advwatres.2015.12.020>.
 26. Cory, R. M., K. H. Harrold**, **B.T. Neilson**, and G.W. Kling. 2015. “Controls on dissolved organic matter (DOM) degradation in a headwater stream: the influence of photochemical and hydrological conditions in determining light-limitation or substrate-limitation of photo-degradation.” *Biogeosciences*. 12, 6669-6685. <https://doi.org/10.5194/bg-12-6669-2015>.
 25. Majerova*, M., **B.T. Neilson**, N.M. Schmadel**, C. Snow**, J. Wheaton. 2015. "Impacts of beaver dams on hydrologic and temperature regimes in a mountain stream." *Hydrology and Earth System Sciences*. 19, 1–16. <https://doi.org/10.5194/hess-19-3541-2015>.
 24. Schmadel**, N. M., **B.T. Neilson**, J. Heavilin. 2015. "Spatial considerations of stream hydraulics in reach scale temperature modeling." *Water Resources Research*. 51, 5566-5581. <https://doi.org/10.1002/2015WR016931>.
 23. Schmadel**, N.M., **B.T. Neilson**, J. Heavilin, A. Wörman, D.K. Stevens. 2014. "The influence of spatially variable stream hydraulics on reach scale transient storage modeling." *Water Resources Research*. 50(12): 9287-9299. <https://doi.org/10.1002/2015WR016931>.
 22. Hobson**, A. J., **B.T. Neilson**, N. von Stackelberg, M. Shupryt, J. Ostermiller, G. Pelletier, S. C. Chapra. 2014. "Development of minimalistic data collection strategy for QUAL2Kw." *Journal of Water Resources Management and Planning*. [https://doi.org/10.1061/\(ASCE\)WR.1943-5452.0000488](https://doi.org/10.1061/(ASCE)WR.1943-5452.0000488).
 21. Cardenas, M.B., M. Doering, D.S. Rivas***, C. Galdeano***, **B.T. Neilson**, C.T. Robinson. 2014. “Analysis of the temperature dynamics of a proglacial river using time-lapse thermal imaging and energy balance modeling.” *Journal of Hydrology*. 519 (Part B); 1963-1973. <https://doi.org/10.1016/j.jhydrol.2014.09.079>.
 20. Bowerman**, T., **B.T. Neilson**, P. Budy. 2014. "Effects of fine sediment, hyporheic flow, and spawning site selection on survival and development of bull trout embryos." *Canadian Journal of Fisheries and Aquatic Sciences*. 71(7), 1059-1071. <https://doi.org/10.1139/cjfas-2013-0372>.
 19. Schmadel**, N. M., **B.T. Neilson**, T. Kasahara. 2014. "Deducing the spatial variability of exchange within a longitudinal channel water balance." *Hydrological Processes*. 28(7), 3088-3103. <https://doi.org/10.1002/hyp.9854>.
 18. von Stackelberg, N.O. and **B.T. Neilson**. 2014. "A collaborative approach to calibration of a riverine water quality model." *Journal of Water Resources Planning and Management*. 140(3), 393-405. [https://doi.org/10.1061/\(ASCE\)WR.1943-5452.0000332](https://doi.org/10.1061/(ASCE)WR.1943-5452.0000332).
 17. Epstein**, D., **B.T. Neilson**, K. Goodman, D.K. Stevens, W. Wurtsbaugh. 2013. "A modeling approach for assessing the effect of multiple alpine lakes in sequence on nutrient transport." *Aquatic Sciences*. 75(2),199–212. <https://doi.org/10.1007/s00027-012-0267-2>.
 16. Alminagorta**, O., B. Tesfatsion**, D. Rosenberg, **B.T. Neilson**. 2013. "Simple optimization method to determine best management practices to reduce phosphorus loading in Echo Reservoir, Utah." *Journal of Water Resources Planning and Management*. 139, 1. [https://doi.org/10.1061/\(ASCE\)WR.1943-5452.0000224](https://doi.org/10.1061/(ASCE)WR.1943-5452.0000224).
 15. Wörman, A., J. Riml**, N. Schmadel**, **B.T. Neilson**, A. Bottacin-Busolin, and J. Heavilin. 2012. "Spectral scaling of heat fluxes in streambed sediments." *Geophysical Research Letters*. 39, L23402. <https://doi.org/10.1029/2012GL053922>.

14. Heavilin*, J. and **B.T. Neilson**. 2012. "Approximation of inverse Laplace transform solution to heat transport in a stream system." *Water Resources Research*. 48, 9, W09603. <https://doi.org/10.1029/2012WR012329>.
13. Bingham**, Q.G., **B.T. Neilson**, C.M.U. Neale, M.B. Cardenas. 2012. "Application of high-resolution, remotely sensed data for transient storage modeling parameter estimation." *Water Resources Research*. 48, 8. <https://doi.org/10.1029/2011WR011594>.
12. Heavilin*, J. and **B.T. Neilson**. 2012. "An analytical solution to main channel heat transport with surface heat flux." *Advances in Water Resources*. 47, 67-75. <http://dx.doi.org/10.1016/j.advwatres.2012.06.006>.
11. Merck**, M. F. and **B.T. Neilson**. 2012. "Modelling in-pool temperature variability in a beaded arctic stream." *Hydrological Processes*. 26(25), 3921–3933. <https://doi.org/10.1002/hyp.8419>.
10. Merck**, M. F., **B.T. Neilson**, R. Cory, G.W. Kling. 2012. "Variability of instream and riparian storage in a beaded arctic stream." *Hydrological Processes*. 26, 2938-2950. <https://doi.org/10.1002/hyp.8323>.
9. Bandaragoda*, C. and **B.T. Neilson**. 2011. "Increasing parameter certainty and data utility through multi-objective calibration of a spatially distributed temperature and solute model." *Hydrology and Earth System Sciences*. 15, 1547-1561. <https://doi.org/10.5194/hess-15-1547-2011>.
8. Schmadel**, N.M., **B.T. Neilson**, D.K. Stevens. 2010. "Approaches to estimate uncertainty in longitudinal channel water balances." *Journal of Hydrology*. 394, 357-369. <https://doi.org/10.1016/j.jhydrol.2010.09.011>.
7. **Neilson, B.T.**, D. K. Stevens, S.C. Chapra, C. Bandaragoda. 2010. "Two-zone transient storage zone modeling using temperature and solute data with multi-objective calibration: Part 2 – temperature and solute." *Water Resources Research*. 46, W12521. <https://doi.org/10.1029/2009WR008759>.
6. **Neilson, B.T.**, S.C. Chapra, D. K. Stevens, C. Bandaragoda. 2010. "Two-zone transient storage zone modeling using temperature and solute data with multi-objective calibration: Part 1 –temperature." *Water Resources Research*. 46, W12520. <https://doi.org/10.1029/2009WR008756>.
5. **Neilson, B.T.**, C. E. Hatch, H. Ban, and S. W. Tyler. 2010. "Solar radiative heating of fiber-optic cables used to monitor temperatures in water." *Water Resources Research*. 46, W08540. <https://doi.org/10.1029/2009WR008354>.
4. **Neilson, B.T.**, D.K. Stevens, S.C. Chapra, C. Bandaragoda. 2009. "Data collection methodology for dynamic temperature model testing and corroboration." *Hydrological Processes*. 23, 2902-2914. <https://doi.org/10.1002/hyp.7381>.
3. Ames, D.P., **B.T. Neilson**, D.K. Stevens, U.L. Lall. 2005. "Using bayesian networks to model watershed management decisions: an East Canyon Creek case study." *Hydroinformatics*. 7(4), 267-282. <https://doi.org/10.2166/hydro.2005.0023>.
2. **Neilson, B.T.**, S.C. Chapra. 2003. "Integration of water quality monitoring and modeling for TMDL development." *Water Resources Impact*. 5(1), 9-11.
1. **Neilson, B.T.**, D.K. Stevens. 2002. "Issues related to the success of the TMDL program." *Water Resources Update*. 122, 55-61.

Book Chapters/Sections:

3. King**, T.V. and **B.T. Neilson**. 2017. "Our Arctic Nation: Utah", Our Arctic Nation. U.S. State Department.
2. **Neilson, B.T.**, D.K. Stevens, J.S. Horsburgh. 2005. "TMDL Development Approaches", Total Maximum Daily Load: Approaches and Challenges. PennWell. Tulsa.
1. **Neilson, B.T.** and R. Kinerson. 2003. "The Role of Models" and portion of "Tools for Developing and Implementing Watershed Plans and TMDLs." Jarrell, W.M. Water Quality Monitoring for Watershed Planning and TMDLs. YSI Incorporated.

CONFERENCE PAPERS (2008-Current)

=Neilson Post-Doctoral Researcher, ** = Neilson Graduate Student, * = Neilson Undergraduate Student
+= Post-Doctoral Researcher, ++ = Graduate Student, +++ = Undergraduate Student*

7. Jensen⁺⁺, A. **B.T. Neilson**, M. McKee, Y. Chen. 2012. "Thermal remote sensing with an autonomous unmanned aerial remote sensing platform for surface stream temperatures." 2012 IEEE International Geoscience and Remote Sensing Symposium. Munich, Germany.
6. von Stackelberg, N.O., **B.T. Neilson**, H.N. Arens. "Collaborative calibration of a water quality model of an urbanized river." November, 2010. ASABE TMDL 2010: Watershed Management to Improve Water Quality Conference. Baltimore, MD.
5. Caplan, A. J., **B.T. Neilson**, M. E. Baker. "Water quality trading in an integrated hydrologic modeling framework." June, 2009. AWRA 2009 Summer Specialty Conference. Snowbird, UT.
4. **Neilson, B.T.**, C. Bandaragoda, M.E. Baker, J.S. Horsburgh, D.K. Stevens. "Watershed modeling for water quality trading." June, 2009. AWRA 2009 Summer Specialty Conference. Snowbird, UT.
3. Schmadel^{**}, N. M. and **B.T. Neilson**. "Estimating uncertainty in approaches used to quantify surface water - ground water exchange." March 2009. Lessons from Continuity and Change in the Fourth International Polar Year Symposium. Synopsis Paper. Fairbanks, AK.
2. Bingham^{**}, Q.G. and **B.T. Neilson**. "Incorporation of thermal imagery in parameter estimation and model calibration." March 2009. Lessons from Continuity and Change in the Fourth International Polar Year Symposium. Synopsis Paper. Fairbanks, AK.
1. Bingham^{**}, J.D. and **B.T. Neilson**. "Data collection and modeling for determining stream bed conduction parameters." March 2009. Lessons from Continuity and Change in the Fourth International Polar Year Symposium. Synopsis Paper. Fairbanks, AK.

PROFESSIONAL PRESENTATIONS (2008-Current)

=Neilson Post-Doctoral Researcher, ** = Neilson Graduate Student, * = Neilson Undergraduate Student
+= Post-Doctoral Researcher, ++ = Graduate Student, +++ = Undergraduate Student*

134. Cardenas, M.B., X. Liu, X. Chen, S. Ferencz⁺⁺, S. Muñoz⁺⁺⁺, M. Kaufman, B. Li, A. Turetaia⁺⁺, L. Zheng, J. Brown, E. Graham, D. Mohrig, **B. T. Neilson**, J. Stegen, L. Wang. "Cascading disequilibrium: a glimpse into dynamic hydro-biogeochemical processes in hyporheic zones." Goldschmidt 2019. August 18-23, 2019. Barcelona, Spain.
133. Alger⁺⁺, M., B. Lane, **B.T. Neilson**. "Characterizing streamflow and temperature patterns on the Blacksmith Fork River to prevent summer dewatering." 2019 UCOWR/NIWR Annual Water Resources Conference. June 11-13, 2019. Snowbird, Utah.
132. Murray⁺⁺, D., **B.T. Neilson**, J. Brahney. "Can beavers mitigate non-point source pollution?" 2019 Society for Freshwater Science (SFS) Annual Meeting. May 19-23, 2019. Salt Lake City, Utah,
131. **Neilson, B.T.**, H. Tennant^{***}, T.L. Stout^{**}, Miller, M., Gabor⁺, R.S., Y. Jameel⁺⁺, M. Millington⁺⁺, A. Gelderloos⁺⁺, G.J. Bowen, P.D. Brooks. "Stream-centric methods for determining groundwater contributions in karst mountain watersheds." 2019 USU Spring Runoff Conference. March 26, 2019. Logan, UT.

130. Strong, P., H. Tennant**, J.S. Horsburgh, **B.T. Neilson**. “The Logan River Observatory: A lab in our own backyard.” 2019 USU Spring Runoff Conference. March 26, 2019. Logan, UT.
129. Mihalevich**, B., **B.T. Neilson**, J.C. Schmidt, D.E. Rosenberg, D.G. Tarboton, C.A. Buahin*. “Dynamic River Temperature Model for the Colorado River within Grand Canyon.” 2019 USU Spring Runoff Conference. March 26, 2019. Logan, UT.
128. Alger**, M., B. Lane, **B.T. Neilson**. “Characterizing streamflow and temperature patterns on the Blacksmith Fork River to prevent summer dewatering.” 2019 USU Spring Runoff Conference. March 26, 2019. Logan, UT.
127. Capito**, L., **B.T. Neilson**, J. Brahney. “Environmental controls on didymo bloom formation.” 2019 USU Spring Runoff Conference. March 26, 2019. Logan, UT.
126. Ferencz**, S.B., M.B. Cardenas, **B.T. Neilson**. “Analysis of the effects of dam releases on bank storage fluid and solute exchange through linked longitudinal in-stream and transverse groundwater models.” 2018 Fall Meeting, American Geophysical Union, December 10-14, 2018. Abstract B51L-2117. Washington, D.C.
125. Cardenas, M.B., **B.T. Neilson**, M.T. O’Connor**, M.T. Rasmussen***, T.V. King**, G.W. Kling. “Groundwater flow and exchange across the land surface explain carbon export patterns in a continuous permafrost watershed.” 2018 Fall Meeting, American Geophysical Union, December 10-14, 2018. Abstract B23C-04. Washington, D.C.
124. Cardenas, M.B., M. Kaufman **, L. Zheng, L. Wang, A. Turetaia, F. Norman, S. Munoz***, S.B. Ferencz**, **B.T. Neilson**. “Perpetual hyporheic motion (and reaction): a glimpse into dynamic coupled physical and biogeochemical processes in hyporheic zones.” 2018 Fall Meeting, American Geophysical Union, December 10-14, 2018. Abstract H31D-01. Washington, D.C.
123. Mihalevich, B., **B.T. Neilson**, J.C. Schmidt, D.E. Rosenberg, D.G. Tarboton, C.A. Buahin. “Dynamic River Temperature Model for the Colorado River within Grand Canyon.” 2018 Fall Meeting, American Geophysical Union, December 10-14, 2018. Abstract H43K-2643. Washington, D.C.
122. O’Connor, M.T. **, K.D. Nicholaides***, M.B. Cardenas, **B.T. Neilson**, G.W. Kling. “Predictability of variable arctic soil hydraulic and thermal properties, and implications of such variability on future thaw.” 2018 Fall Meeting, American Geophysical Union, December 10-14, 2018. Abstract C43C-1812. Washington, D.C.
121. King**, T.V., **B.T. Neilson**. “Characterization of Spatial Heterogeneity in River Temperatures in a Tundra River Using Thermal Infrared Imagery.” 2018 Fall Meeting, American Geophysical Union, December 10-14, 2018. Abstract H21L-1828. Washington, D.C.
120. **Neilson, B.T.**, H. Tennant***, T.L. Stout**, Miller, M., Gabor+, R.S., Y. Jameel**, M. Millington**, A. Gelderloos**, G.J. Bowen, P.D. Brooks. “Stream-centric methods for determining groundwater contributions in karst mountain watersheds.” 2018 Fall Meeting, American Geophysical Union, December 10-14, 2018. Abstract H33E-04. Washington, D.C.
119. O’Connor, M.T. **, K.D. Nicholaides***, S.B. Ferencz**, M.B. Cardenas, **B.T. Neilson**, A. Jan, E.T. Coon, G.W. Kling. “Impact of a depth-variable organic mat on thaw and groundwater flow in continuous permafrost” November 2018, Geological Society of America Annual Meeting. Indianapolis, IN.
118. King**, T.V., **B.T. Neilson**. “Identifying source areas for flow and heat in the Kuparuk River, Alaska” November 2018, Geological Society of America Annual Meeting. Indianapolis, Indiana.
117. **Neilson, B.T.** and T.V. King**. 2018. “The role of hydrologic variability in understanding Arctic river temperature” POLAR 2018 SCAR/IASC Open Science Conference, June 18-23, 2018. Davos, Switzerland.

116. **Neilson, B.T.**, M.B. Cardenas, M.T. O'Connor⁺⁺, M.T. Rasmussen^{***}, T.V. King^{**}, G.W. Kling. 2018. "Groundwater transport and exchanges on the land surface control stream chemistry in permafrost." POLAR 2018 SCAR/IASC Open Science Conference, June 18-23, 2018. Davos, Switzerland.
115. Cory, R.M., T.V. King^{**}, **B.T. Neilson**, G.W. Kling. 2018. "Controls on fluxes of labile DOC from the Kuparuk River to the Arctic Ocean." POLAR 2018 SCAR/IASC Open Science Conference, June 18-23, 2018. Davos, Switzerland.
114. Buahin*, C. A., J.S. Horsburgh., and **B.T. Neilson**. 2018. "Enabling High-Performance Heterogeneous Computing for Component-Based Integrated Water Modeling Frameworks." 9th International Congress on Environmental Modelling and Software, Modelling for Sustainable Food-Energy-Water Systems. June 24-28, 2018. Fort Collins, Colorado, USA.
113. Murray, D. ⁺⁺, **B.T. Neilson**, J. Brahney. 2018. "Beaver Induced Biogeochemical Alterations in Mountain Streams" 2018 Society for Freshwater Science Annual Meeting. May 20-24, 2018. Detroit, MI.
112. Horsburgh, J.S., M.A. Baker, **B.T. Neilson**, P. Strong, A.S. Jones. "Logan River Observatory: Extending iUTAH's GAMUT network for long-term monitoring to inform local policy and water management." 2018 USU Spring Runoff Conference. March 27, 2018. Logan, UT.
111. Tennant^{***}, H., **B.T. Neilson**, M.L. Barnes^{**}, T.L. Stout^{**}, M. Miller, R. Gabor⁺, M. Millington⁺⁺, Y. Jameel⁺⁺, A. Gelderloos⁺⁺, G. Bowen, P. Brooks. 2018 "Combined Approaches for Estimating Groundwater Exchanges in Karst Watersheds," April 2018. 2018 USU Student Research Symposium. Logan, UT.
110. Christensen, H. ⁺⁺, S.B. Ferencz⁺⁺, M.B. Cardenas, **B.T. Neilson**, P.C. Bennett. "Soil gas dynamics and microbial activity in the unsaturated zone of a regulated river." 2017 Fall Meeting, American Geophysical Union, December 11-15, 2017. Abstract H33D-1722. New Orleans, LA.
109. Munoz, S. ⁺⁺⁺, S.B. Ferencz⁺⁺, M.B. Cardenas, **B.T. Neilson** "Heat transport in the streambed of a large regulated river." 2017 Fall Meeting, American Geophysical Union, December 11-15, 2017. Abstract H23D-1702. New Orleans, LA. (Received Outstanding Student Paper Award (OSPA) in Hydrology)
108. Ferencz, S.B.⁺⁺, M.B. Cardenas, **B.T. Neilson**, Jeff Watson⁺⁺. "Groundwater-surface water interactions and downstream transport of water, heat, and solutes in a hydropeaked river" 2017 Fall Meeting, American Geophysical Union, December 11-15, 2017. Abstract H11N-05. New Orleans, LA.
107. O'Connor⁺⁺, M., M.B. Cardenas, **B.T. Neilson**, Nicholaides, K.D. ⁺⁺⁺, G.W. Kling, "Groundwater dynamics and export from active layer aquifers overlying permafrost." 2017 Fall Meeting, American Geophysical Union, December 11-15, 2017. Abstract C33F-04. New Orleans, LA.
106. Nicholaides, K.D. ⁺⁺⁺, M. O'Connor⁺⁺, M.B. Cardenas, **B.T. Neilson**, G.W. Kling, "The Effects of Different Scales of Topographic Variation on Shallow Groundwater Flow in an Arctic Watershed." 2017 Fall Meeting, American Geophysical Union, December 11-15, 2017. Abstract C21A-1111. New Orleans, LA.
105. King^{**}, T.V., **B.T. Neilson**, D.L. Kane, L.D. Overbeck⁺⁺ M.T. Rasmussen^{***}. "Intra-basin variability in lateral flow and runoff generation over continuous permafrost" 2017 Fall Meeting, American Geophysical Union, December 11-15, 2017. Abstract C33F-01. New Orleans, LA.
104. King^{**}, T.V., **B.T. Neilson**. "Investigating the thermal impacts of hyporheic exchange in an alluvial Arctic river" October 2017. 2017 Geological Society of America Annual Meeting. Seattle, WA. (Received research and travel grant from GSA)
103. Tennant^{***}, H., **B.T. Neilson**, M.L. Barnes^{**}, T.L. Stout^{**}, M. Miller, R. Gabor⁺, M. Millington⁺⁺, Y. Jameel⁺⁺, A. Gelderloos⁺⁺, G. Bowen, P. Brooks. 2017 "Combined Approaches for Estimating Groundwater Exchanges in Karst Watersheds," May 2017. American Water Resources Spring Specialty Conference 2017. Alta, UT.

102. King**, T.V., **B.T. Neilson.**, M.T. Rasmussen***, D.L. Kane, L.D. Overbeck⁺⁺. “Lateral and Vertical Hydrologic and Thermal Connectivity in a Low Arctic River Basin” May 2017. American Water Resources Spring Specialty Conference 2017. Alta, UT.
101. King**, T.V., **B.T. Neilson.** “Estimating River Discharge from Aerial Imagery” April, 2017. Utah State University Student Research Symposium. Logan, UT. (Received Outstanding Graduate Scholar Award and Graduate Oral Presentation Award Engineering)
100. King, T.V. **, **B.T. Neilson.**, D.L. Kane, L.D. Overbeck⁺⁺, M.T. Rasmussen***. “Heat flux dynamics in Low Arctic Rivers.” March 2017. Utah State University Spring Runoff Conference 2017. Logan, UT. (Received Outstanding Poster Presentation Award)
99. Haider, M.R.** , **B.T. Neilson**, M.B. Cardenas. 2017. “Surface and Groundwater Interactions for a Regulated River” March, 2017. Utah State University Spring Runoff Conference 2017. Logan, UT.
98. Richens, J. ⁺⁺, Beltran, M. ⁺⁺, R.R. Dupont, D. Sorenson, **B.T. Neilson.** 2017. “Evaluation of Optimal Laboratory Methods for Measuring Nitrogen Transformation Rates in East Canyon Creek” March, 2017. Utah State University Spring Runoff Conference 2017. Logan, UT.
97. Beltran, M. ⁺⁺, J. Richens⁺⁺, R.R. Dupont, D. Sorenson, **B.T. Neilson.** 2017. “The Use of in-Situ Benthic Chambers to Evaluate Nitrogen Transformation Rates in East Canyon Creek” March, 2017. Utah State University Spring Runoff Conference 2017. Logan, UT.
96. Li⁺⁺, A., A. F. Aubeneau, T.V King**, R. M. Cory, **B.T. Neilson**, G.W. Kling, D. Bolster, and A.I. Packman. 2017. “Linking Sunlight-induced Mineralization of Dissolved Organic Matter to Arctic River Hydrodynamics.” 2017 Association for the Sciences of Limnology and Oceanography Mountains to Sea Meeting, Feb 26-Mar 3, 2017. Honolulu, HI.
95. Tennant***, H. and **B.T. Neilson.** 2017 “Groundwater Influences on Logan River Watershed,” Utah Research on Capitol Hill, January 2017. Salt Lake City, UT.
94. Tennant***, H. and **B.T. Neilson.** 2016 “Groundwater Influences on Logan River Watershed,” USU Fall Undergraduate Research Symposium, December 2016. Logan, UT.
93. **Neilson, B.T.**, M.B. Cardenas, M.T. O’Connor**, M.T. Rasmussen***, T.V. King**, G.W. Kling. “Groundwater controls on DOC Transport to Arctic Streams and Rivers.” 2016 Fall Meeting, American Geophysical Union, December 12-16, 2016. Abstract EP23B-0960. San Francisco, CA.
92. King**, T.V., **B.T. Neilson**, D.L. Kane, L. Overbeck⁺⁺, M.T. Rasmussen***. “Heat flux dynamics in Low Arctic Rivers.” 2016 Fall Meeting, American Geophysical Union, December 12-16, 2016. Abstract H33B-1533. San Francisco, CA.
91. Li⁺⁺, A., A. Aubeneau, T. King**, R. Cory, **B.T. Neilson**, G.W. Kling, D. Bolster, A. Packman. “Effects of In-stream Mixing on Photo-mineralization of Dissolved Organic Carbon in Arctic Rivers.” 2016 Fall Meeting, American Geophysical Union, December 12-16, 2016. Abstract GC21A-1050. San Francisco, CA.
90. Gabor, R. ⁺, P. Brooks, **B.T. Neilson**, G. J. Bowen, M.Y. Jameel⁺⁺, S. J. Hall, D. Eiriksson, M. Millington⁺⁺, A. Gelderloos⁺⁺. “Assessing Changes in Water Chemistry along the Mountain to Urban Gradient.” 2016 Fall Meeting, American Geophysical Union, December 12-16, 2016. Abstract H11H- 03. San Francisco, CA.
89. **Neilson, B.T.** 2016 “Permafrost and Beaver Dam Complexes: How do they influence river temperature and the role of groundwater exchanges?” K. Douglas Nelson Colloquium Series, Department of Earth Sciences, Syracuse University. November, 2016. Syracuse, NY. (INVITED)

88. **Neilson, B.T.** 2016. "Understanding Groundwater Influences in Streams and Rivers." Distinguished Lecture Series, Department of Geology, Utah State University. October, 2016. Logan, UT. (INVITED)
87. **Neilson, B.T.** 2016. "Roles of Groundwater/Surface Water Exchanges in Arctic Stream and River Temperature" 2016 Geological Society of America Annual Meeting. September, 2016. Denver, CO. (INVITED)
86. O'Connor⁺⁺, M.T., M.B. Cardenas, **B.T. Neilson**, G.W. Kling. 2016. "Thaw Depth and Groundwater Flow: A Complicated Relationship." IX International Conference on Permafrost, June 15-19, 2016. Potsdam, Germany.
85. King^{**}, T.V., **B.T. Neilson**, M. Rasmussen^{***}, A. Torres-Rua, A. Jensen. 2016. "Application of High Resolution Remotely Sensed Channel Geometry to Quantify Lateral Inflow Gains Through an Arctic Watershed." IX International Conference on Permafrost, June 15-19, 2016. Abstract 565. Potsdam, Germany.
84. King^{**}, T.V., **B.T. Neilson**, M. Rasmussen^{***}, L. Overbeck^{**}, D.L. Kane. 2016. "Water Temperature Controls in Low Arctic Rivers." Invited talk at Max Planck Institute for Biogeochemistry, June 17, 2016. Jena, Germany.
83. Kling, G. W., **B.T. Neilson**, B. Cardenas, and R.M. Cory. "Controls on Dissolved Organic Matter Photo-Degradation in Surface Waters: Residence Time and the Role of Light Versus Substrate Limitation." 2016 Association for the Sciences of Limnology and Oceanography Summer Meeting, June 5-10, 2016. Santa Fe, New Mexico. Abstract ID:27931.
82. King^{**}, T.V., **B.T. Neilson**, A. Jensen, A. Torres-Rua, M. Winkelaar, M. Rasmussen^{***}. 2016. "High Resolution Channel Geometry from Repeat Aerial Imagery." Utah State University Graduate Research Symposium, April 14, 2016. Logan, UT.
81. Gabor, R. ⁺, P. Brooks, **B.T. Neilson**, M.L. Barnes^{**}, T.L. Stout^{**}, M. Millington⁺⁺, A. Gelderloos⁺⁺, H. Tennant^{***}, D. Eiriksson. "Assessing Changes in Water Chemistry along the Mountain to Urban Gradient." 2015 Fall Meeting, American Geophysical Union, December 14-18, 2015. Abstract B41B-0418. San Francisco, CA.
80. Watson⁺⁺, J., M.B. Cardenas, **B.T. Neilson**, P. Bennett. 2015. "Investigation of Hyporheic Thermal Flux and Downstream Attenuation Driven by Hydropeaking in the Colorado River, Austin, Texas." 2015 Fall Meeting, American Geophysical Union, December 14-18, 2015. Abstract H33C-1624. San Francisco, CA.
79. King^{**}, T.V., **B.T. Neilson**, A. Jensen, A. Torres-Rua, M. Winkelaar, M. Rasmussen^{***}. 2015. "High Resolution Channel Geometry from Repeat Aerial Imagery." 2015 Fall Meeting, American Geophysical Union, December 14-18, 2015. Abstract H41H-1370. San Francisco, CA. (Received Outstanding Student Paper Award (OSPA) in Hydrology)
78. **Neilson, B.T.**, T.V. King^{**}, N.M. Schmadel^{**}, J. Heavilin, L. Overbeck⁺⁺, D.L. Kane. 2015. "Water Temperature Controls in Arctic Basins." 2015 Fall Meeting, American Geophysical Union, December 14-18, 2015. Abstract H23H-1671. San Francisco, CA.
77. Gabor, R. ⁺, P. Brooks, **B.T. Neilson**, M.L. Barnes^{**}, T.L. Stout^{**}, M. Millington⁺⁺, A. Gelderloos⁺⁺, H. Tennant^{***}, D. Eiriksson. 2015. "Assessing Changes in Water Chemistry along the Mountain to Urban Gradient." 24th National NSF EPSCoR Conference. November 2015. Portsmouth, NH.
76. Cory, R. M., K. H. Harrold⁺⁺, **B.T. Neilson**, C.P. Ward, and G.W. Kling. 2015. "Controls on dissolved organic matter (DOM) degradation in a headwater stream: the influence of photochemical and hydrological conditions in determining light-limitation or substrate-limitation of photo-degradation," 2015 LTER All Scientists Meeting, August 2015. Estes Park, CO.

75. Rutledge, H. ⁺, M. Andersen, S. Eberhard, L. Halloran⁺⁺, **B. T. Neilson**, G. Rau⁺, C. Li⁺⁺⁺, A. Salma⁺⁺⁺, J. Chen⁺⁺⁺, C. Moll⁺⁺⁺, C. Murphy⁺⁺⁺, A. Baker. "Organic matter content and redox chemistry at upwelling and downwelling hyporheic zones." Australian Groundwater Conference, November 2015. Canberra, Australia.
74. Andersen, M., H. Rutledge⁺, S. Eberhard, L. Halloran⁺⁺, **B.T. Neilson**, G. Rau⁺, C. Li⁺⁺⁺, A. Salma⁺⁺⁺, J. Chen⁺⁺⁺, C. Moll⁺⁺⁺, C. Murphy⁺⁺⁺, M. Cuthbert, A. Baker. "Mapping groundwater discharge and the role of groundwater chemistry for instream ecological processes." Australian Groundwater Conference, November 2015. Canberra, Australia.
73. Tennant^{***}, H, M.L. Barnes^{**}, T. Stout^{**}, **B.T. Neilson**. 2015 "Methods and Techniques for Measuring Discharge in Three Utah Watersheds," iUTAH Summer Symposium, July 2015. Midway, UT.
72. Barnes, M.L. ^{**}, T. Stout^{**}, H. Tennant^{***}, **B.T. Neilson**. 2015. "Groundwater – Surface Water Interactions in Three Utah Watersheds" April, 2015. Utah State University Spring Runoff Conference 2015. Logan, UT.
71. Bassett, S. ^{***}, I. Gowing, **B.T. Neilson**. "Gains and Losses in the Lower Portion of the San Rafael River." April 2015. Utah State University Spring Runoff Conference 2015. Logan, UT.
70. Rasmussen^{***}, M.T., T.V. King^{**}, **B.T. Neilson**. "The influence lateral inflows have on the energy and mass budgets of arctic beaded streams." April 2015. Utah State University Spring Runoff Conference 2015. Logan, UT.
69. King^{**}, T.V., **B.T. Neilson**, D.L. Kane, L. Overbeck⁺⁺, M.T Rasmussen^{***}. "Controls on Arctic River Temperatures: A Delicate Balance." April 2015. Utah State University Student Research Symposium 2015. Logan, UT.
68. Rasmussen^{***}, M.T., T.V. King^{**}, **B.T. Neilson**. "The influence lateral inflows have on the energy and mass budgets of arctic beaded streams." April 2015. Utah State University Student Research Symposium 2015. Logan, UT.
67. Müller⁺⁺, S., J. Stau⁺⁺⁺, C. Duque⁺, E. Sebok⁺, **B.T. Neilson**, P. Engesgaard, 2015. "The value of stable Isotope (18O) and electrical conductivity (EC) as tracers for submarine groundwater exfiltration and density-driven flow infiltration into the aquifer." EGU2015-7259. Vienna, Austria.
66. Li⁺⁺, A, A. Aubeneau, T. King^{**}, R. Cory, **B.T. Neilson**, G.W. Kling, D. Bolster, A. Packman. "Stochastic Modeling of Carbon Photo-Mineralization along Arctic Rivers." 2015 Society for Freshwater Science Annual Meeting, May 17-21, 2015. Milwaukee, WI.
65. Li⁺⁺, A, A. Aubeneau, T. V. King^{**}, R. Cory, **B.T. Neilson**, G.W. Kling, D. Bolster, A. Packman. "Stochastic Modeling of Carbon Photo-Mineralization along Arctic Rivers." 2014 Fall Meeting, American Geophysical Union, December 15-19, 2014. Abstract H51N-0808. San Francisco, CA.
64. King^{**}, T.V., **B.T. Neilson**, L. Overbeck⁺⁺, M. Rasmussen^{***}, D.L. Kane. "Spatial and Temporal Variability in Dominant Heat Fluxes in Arctic Rivers." 2014 Fall Meeting, American Geophysical Union, December 15-19, 2014. Abstract H11B-0878. San Francisco, CA.
63. Constantz, J, Naranjo, R.C., R.G. Niswonger, **B.T. Neilson**, K. Allander, C. Zamora, D. Smith, D. Stonestrom. "Key stream/sediment exchanges of water and heat near stream mouths." 2014 Fall Meeting, American Geophysical Union, December 15-19, 2014. Abstract H23Q-02. San Francisco, CA.
62. King^{**}, T.V., **B.T. Neilson**, L. Overbeck^{**}, D.L. Kane. "Preliminary Identification of Important Heat Fluxes in Rivers in Arctic Alaska" April, 2014. Utah State University Spring Runoff
61. Snow^{**}, C., **B.T. Neilson**, M. Majerova "Predicting the Effect of Beaver Dams on Stream Thermal Heterogeneity" April, 2014. Utah State University Spring Runoff Conference 2014. Logan, UT.

60. Schmadel**, N.M, **B.T. Neilson**, J. E. Heavilin, D.K. Stevens, A. Wörman. "Capturing the effects of spatially variable stream hydraulics in solute transport modeling." April, 2014. Utah State University Spring Runoff Conference 2014. Logan, UT.
59. Stout**, T.L., M. Majerova, **B.T. Neilson**. "Impacts of beaver dams on channel hydraulics and characteristics on Curtis Creek near Hardware Ranch, UT: Stream restoration implications." Presented at Research on Capitol Hill, Salt Lake City, UT (2014, January); STE2M Center Inauguration, Logan, UT (2014, February); Scholars Experience at A-Day Poster Session, Logan, UT (2014, March); USU Spring Runoff Conference, Logan, UT (2014, April); and Utah State University Research Week, Logan, UT (2014, April).
58. Campbell⁺⁺⁺, H., M.A. Baker, **B.T. Neilson**, S. Durham. "Sources of uncertainty in nutrient sampling below a point source." National Conference on Undergraduate Research. April, 2014. Lexington, KY.
57. Kling, G.W., J. Dobkowski, C.P. Ward⁺⁺, B.C. Crump; **B.T. Neilson**, R.M. Cory. "The fate of carbon draining permafrost soils is controlled by photochemical reactions in addition to microbial degradation in Arctic surface waters. 2013 Fall Meeting, American Geophysical Union, December 9-13, 2013. Abstract B14E-04. San Francisco, CA.
56. Naranjo, R.C., K. Allander, **B.T. Neilson**, R.G. Niswonger, J. Constantz. "Surface-Water/Groundwater exchanges for streams entering lakes compared with shoreline exchanges in general." 2013 Fall Meeting, American Geophysical Union, December 9-13, 2013. Abstract H32C-03. San Francisco, CA.
55. **Neilson, B.T.**, M.F. Merck**, G.W. Kling, R.M. Cory, K.H. Harrold⁺⁺, T. V. King**, L. D. Overbeck⁺⁺, S.E. Page⁺, B.L. Miller⁺⁺, and D.L. Kane. "Influences of increased riparian thaw depths on stream temperatures and chemical export in beaded arctic streams." 2013 Fall Meeting, American Geophysical Union, December 9-13, 2013. Abstract H41B-1229. San Francisco, CA.
54. Majerova, M., **B.T. Neilson**, N.M. Schmadel**, J.M. Wheaton, C.J. Snow**. "Influence of Beaver Dams on Channel Complexity, Hydrology, and Temperature Regime in a Mountainous Stream." 2013 Fall Meeting, American Geophysical Union, December 9-13, 2013. Abstract EP43A-0815. San Francisco, CA.
53. Schmadel**, N.M, **B.T. Neilson**, J. E. Heavilin, A. Wörman. "The role of spatially variable stream hydraulics in reach scale, one-dimensional solute predictions." 2013 Fall Meeting, American Geophysical Union, December 9-13, 2013. Abstract H32C-08. San Francisco, CA. (Received Outstanding Student Paper Award (OSPA) in Hydrology)
52. Hobson**, A. J., **B.T. Neilson**, N. von Stackelberg. "QUAL2Kw as a decision support tool: considerations for data collection, calibration, and numeric nutrient criteria." May, 2013. Water Environment Association of Utah Annual Conference 2013. St. George, UT.
51. Hobson**, A. J., **B.T. Neilson**, N. von Stackelberg. "A tool to identify numeric nutrient criteria with QUAL2Kw." April, 2013. Utah State University Spring Runoff Conference 2013. Logan, UT.
50. Schmadel**, N.M, **B.T. Neilson**, J. E. Heavilin, A. Wörman. "Investigating the impact of higher spatial resolution parameter information on stream solute transport predictions." April, 2013. Utah State University Spring Runoff Conference 2013. Logan, UT.
49. **Neilson, B.T.** "Roles of heat transport in transient storage modeling." 2012 Fall Meeting, American Geophysical Union, December 3-7, 2012. Abstract H11E-1238. San Francisco, CA. (INVITED)
48. **Neilson, B.T.** "Determining Key heat fluxes necessary for instream temperature predictions." 2012 Fall Meeting, American Geophysical Union, December 3-7, 2012. Abstract H51M-02. San Francisco, CA. (INVITED)

47. Schmadel**, N.M, **B.T. Neilson**, J. E. Heavilin, A. Wörman. "Analysis of two-zone transient storage parameters using analytical transport solutions, moment statistics, and a convolution of solutions." 2012 Fall Meeting, American Geophysical Union, December 3-7, 2012. Abstract H14B-08. San Francisco, CA.
46. Consolati⁺⁺, F., J. Wheaton, M. Pollock, N. Bouwes, and **B.T. Neilson**. "The role of beaver in shaping steelhead thermal refugia in a central Oregon stream." September 2012. 43rd Annual Binghamton Geomorphology Symposium 2012. Jackson Hole, WY.
45. Jensen⁺⁺, A. **B.T. Neilson**, M. McKee, Y. Chen. 2012. "Thermal remote sensing with an autonomous unmanned aerial remote sensing platform for surface stream temperatures." 2012 IEEE International Geoscience and Remote Sensing Symposium. Munich, Germany.
44. Riml⁺⁺, J., A. Wörman, N. Schmadel**, and **B.T. Neilson**. (2012), "Estimating residence time distributions in the hyporheic zone using heat." 2012 EGU General Assembly, April 22-27, 2012. Vol. 14, EGU2012-7283, 2012. Vienna, Austria.
43. Wörman, A., J. Riml⁺⁺, N. Schmadel**, **B.T. Neilson**, A. Bottacin-Busolin, and J. Heavilin. "Evaluating thermal diffusivity in stream-beds from temperature spectra." 2012 EGU General Assembly, April 22-27, 2012. Vol. 14, EGU2012-6318-4, 2012. Vienna, Austria.
42. Alminagorta⁺⁺, O., B. Tesfatsion⁺⁺, D. Rosenberg, **B.T. Neilson**. "Simple optimization method to determine best management practices to reduce phosphorus loading in Echo Reservoir, Utah." April 2012. Water Environment Association of Utah Annual Conference 2012. St. George, UT.
41. Consolati⁺⁺, F., J. Wheaton, M. Pollock, N. Bouwes, and **B.T. Neilson**. "The role of beaver in shaping steelhead trout habitat complexity and thermal refugia in a central Oregon stream." March 2012. Utah State University Spring Runoff Conference 2012. Logan, UT.
40. Snow^{***}, C. and **B.T. Neilson**. "Effects of dissolved organic carbon on sediment temperatures in beaver ponds." March 2012. Utah State University Spring Runoff Conference 2012. Logan, UT.
39. Hobson^{***}, A.J., **B.T. Neilson**, N. von Stackelberg. "Can consistent data collection and modeling strategies provide the information necessary to address instream water quality impairments?" March 2012. Utah State University Spring Runoff Conference 2012. Logan, UT.
38. Schmadel**, N.M., **B.T. Neilson**, T. Kasahara. "Combining conventional data collection techniques to identify surface-subsurface exchange components." March 2012. Utah State University Spring Runoff Conference 2012. Logan, UT.
37. Bandaragoda*, C. and **B.T. Neilson**. "A systematic approach for increasing parameter certainty in a spatially distributed temperature and solute model using multi-objective evolutionary optimization." 2011 Fall Meeting, American Geophysical Union, December 5-9, 2011. Abstract H34A-08. San Francisco, CA.
36. Riml⁺⁺, J., A. Wörman, N.M. Schmadel**, **B.T. Neilson**. "Temperature; a natural tracer to define residence time distributions in transient storage zones." 2011 Fall Meeting, American Geophysical Union, December 5-9, 2011. Abstract H33I-01. San Francisco, CA.
35. **Neilson, B.T.**, M.F. Merck**, R.M. Cory, G.W. Kling. (2011), "Combining various natural tracers to identify flow paths in arctic beaded streams." 2011 Fall Meeting, American Geophysical Union, December 5-9, 2011. Abstract H51M-07. San Francisco, CA.
34. **Neilson, B.T.**, Bandaragoda, C., Chapra, S.C., Stevens, D.K., Schmadel**, N.M., Bingham**, Q.G., Neale, C.M.U., and Cardenas, M.B., "Use of instream heat budgets and supporting data for predicting surface and subsurface transient storage influences." 2011 Geological Society of America Annual Meeting. October, 2011. Minneapolis, MN. (INVITED)

33. Bowerman⁺⁺, T., P. Budy, **B.T. Neilson** "Effects of substrate size, hyporheic exchange, and spawning site selection on bull trout egg and alevin survival." September 4-8, 2011. 141st National meeting of the American Fisheries Society, Seattle, WA.
32. Alminagorta⁺⁺, O., B. Tesfatsion⁺⁺, D. Rosenberg, **B.T. Neilson**. "Simple optimization method to determine best management practices to reduce phosphorus loading in Echo Reservoir, Utah." UCOWR/NIWR Conference Planning for Tomorrow's Water: Snowpack, Aquifers, and Reservoirs. July 11-14, 2011. Boulder, Colorado.
31. Schmadel^{**}, N.M., J. Heavilin, **B.T. Neilson**, A. Wörman. "Investigating the effects of channel spatial variability on two-zone transient storage modeling." EGU2011-3749. European Geophysical Union, General Assembly 20. April 3-8, 2011. Vienna, Austria.
30. Heavilin, J., **B.T. Neilson**, N.M. Schmadel^{**}, A. Wörman. "Advancing solutions of the two-zone temperature and solute transport model by solving a simplified temperature transport component." EGU2011-3914. European Geophysical Union, General Assembly 20. April 3-8, 2011. Vienna, Austria.
29. Marquina^{***}, O.A., **B.T. Neilson**, N.M. Schmadel^{*}. "Seasonal fluctuations of stream water-groundwater interactions." March 2011. Utah State University Spring Runoff Conference 2011. Logan, UT.
28. Hobson^{**}, A.J. and **B.T. Neilson**. "Investigating the effects of data resolution on QUAL2K predictions." March 2011. Utah State University Spring Runoff Conference 2011. Logan, UT.
27. Schmadel^{**}, N.M., J. Heavilin, **B.T. Neilson**, A. Wörman. "Incorporating channel spatial variability into two-zone transient storage modeling." March 2011. Utah State University Spring Runoff Conference 2011. Logan, UT.
26. Merck^{**}, M. F. and **B.T. Neilson**. "Modeling instream temperature dynamics in beaded arctic streams." March 2011. Utah State University Spring Runoff Conference 2011. Logan, UT.
25. Merck^{**}, M. F. and **B.T. Neilson**. "Types and variability of instream and bank storage in beaded arctic streams." Eos Trans. AGU Fall Meet. Suppl., Abstract H21B-1042. 2010.
24. von Stackelberg, N.O., **B.T. Neilson**, H.N. Arens. "Collaborative Calibration of a Water Quality Model of an Urbanized River." November, 2010. ASABE TMDL 2010: Watershed Management to Improve Water Quality Conference. Baltimore, MD.
23. Bingham^{**}, Q.G., **B.T. Neilson**, C.M.U. Neale, M.B. Cardenas. "Delineation of dead zones in rivers using remotely-sensed data and their utility in improving two-zone temperature and solute transport model performance." 2010 ASLO/NABS Joint Meeting. June 2010. Santa Fe, NM.
22. Hobson^{***}, A. J. and **B.T. Neilson**. "Effects of turbidity on shortwave radiation and instream temperatures." April 2010. Utah State University Spring Runoff Conference 2010. Logan, UT.
21. Wilson⁺⁺, E., **B.T. Neilson**, H. Ban. "Development of technology for Streambed Thermal Property Instrument (SPI)." Utah State University Graduate Student Symposium 2010. Logan, UT.
20. Hobson^{***}, A. J. and **B.T. Neilson**. "Effects of turbidity on shortwave radiation and instream temperatures." March 2010. Utah State University Undergraduate Student Showcase 2010. Logan, UT. (Awarded 1st Place Poster for the College of Engineering)
19. Merck^{**}, M. F. and **B.T. Neilson**. "Quantifying instream temperature variability in beaded arctic streams." April 2010. Utah State University Spring Runoff Conference 2010. Logan, UT.

18. Lyman***, C., **B.T. Neilson**, and N. M. Schmadel**. "Effects of beaver dams on curtis creek temperature and flow." April 2010. Utah State University Spring Runoff Conference 2010. Logan, UT.
17. Schmadel**, N. M., **B.T. Neilson**, D. K. Stevens. "Reliability of approaches used to quantify surface water-groundwater interactions." Eos Trans. AGU 92(52) Fall Meet. Suppl., Abstract H51I-0902. 2009.
16. Ghabayen*, S., N. M. Schmadel**, **B.T. Neilson**. "Characterization of groundwater-surface water interactions using GMS and differential gauging approaches." September 2009. AWRA Fall 2009 Annual Conference. Seattle, WA.
15. Caplan, A. J., **B.T. Neilson**, M. E. Baker. "Water quality trading in an integrated hydrologic modeling framework." June, 2009. AWRA 2009 Summer Specialty Conference. Snowbird, UT.
14. **Neilson, B.T.**, C. Bandaragoda, M.E. Baker, J.S. Horsburgh, D.K. Stevens. "Watershed modeling for water quality trading." June, 2009. AWRA 2009 Summer Specialty Conference. Snowbird, UT.
13. Bingham**, Q.G. and **B.T. Neilson**. "Incorporation of thermal imagery in parameter estimation and model calibration." April 2009. Utah State University Spring Runoff Conference 2009. Logan, UT.
12. Bingham**, J.D. and **B.T. Neilson**. "Data collection and modeling for determining stream bed conduction parameters." April 2009. Utah State University Spring Runoff Conference 2009. Logan, UT. (Awarded 2nd place in student poster competition.)
11. Schmadel**, N. M. and **B.T. Neilson**. "Reliability of approaches used to characterize surface water-groundwater exchange." April 2009. Utah State University Spring Runoff Conference 2009. Logan, UT. (Awarded 1st place in student oral presentation competition.)
10. **Neilson, B.T.** "Incorporation of surface and subsurface storage in stream temperature predictions." March 2009. Lessons from Continuity and Change in the Fourth International Polar Year Symposium. Fairbanks, AK.
9. Schmadel**, N. M. and **B.T. Neilson**. "Estimating uncertainty in approaches used to quantify surface water-ground water exchange." March 2009. Lessons from Continuity and Change in the Fourth International Polar Year Symposium. Poster. Fairbanks, AK. (Included Synopsis Paper)
8. Bingham**, Q.G. and **B.T. Neilson**. "Incorporation of thermal imagery in parameter estimation and model calibration." March 2009. Lessons from Continuity and Change in the Fourth International Polar Year Symposium. Poster. Fairbanks, AK. (Included Synopsis Paper)
7. Bingham**, J.D. and **B.T. Neilson**. "Data collection and modeling for determining stream bed conduction parameters." March 2009. Lessons from Continuity and Change in the Fourth International Polar Year Symposium. Poster. Fairbanks, AK. (Included Synopsis Paper)
6. **Neilson, B.T.**, C. Hatch, Q. Bingham**, S. Tyler. "Effect of solar radiation on fiber optic cables used in distributed temperature sensing (DTS) applications." Eos Trans. AGU 89(53) Fall Meet. Suppl., Abstract H51H-0970. 2008.
5. Schmadel**, N. M., **B.T. Neilson**, T. Kasahara. "Comparison of approaches used to characterize stream water-groundwater exchange." Eos Trans. AGU 89(53) Fall Meet. Suppl., Abstract H33F-1083. 2008.
4. Schmadel**, N. M., J. D. Bingham**, **B.T. Neilson**, A.J. Hobson***. "Methods for quantifying groundwater and surface water interactions in Curtis Creek." March 2008. Utah State University Spring Runoff Conference 2008. Logan, UT.
3. Bingham**, Q. G., **B.T. Neilson**, C.M.U. Neale, B. Cardenas. "Data collection for two-zone temperature and solute model testing." March 2008. Utah State University Spring Runoff Conference 2008. Logan, UT.

2. Kasahara, T. and **B.T. Neilson**. "Spring inundation and summer water temperature in a restored reach of the Provo River in Northern Utah." May 2008. NABS 56th Annual Meeting. Salt Lake City, UT.
1. **Neilson, B.T.** and M. McKee. "Water resources training needs in Iraq: Experiences of some American water engineers." July, 2008. UCOWR/NIWR Annual Conference. Durham, N.C.

AREAS OF EXPERTISE

Current Research Areas:

Surface Water Modeling and Field Experiments-

- Develop data collection strategies for quantifying solute and heat fate and transport in streams, rivers, and ponds.
- Develop, test, and calibrate instream models based on detailed process data.
- Determine the role of groundwater/surface water interactions in mass and heat fate and transport in surface waters.
- Research the application of optimization procedures for parameter estimation and uncertainty analysis for process based models.
- Test and develop new monitoring technologies or approaches.

Prior Areas of Research:

Integrated watershed management and training-

- Develop general water quality training materials to assist developing countries in establishment of watershed management strategies.
- Develop and conduct training on the use of EPA endorsed watershed management tools (e.g., BASINS, HSPF, QUAL2E).
- Investigate data analysis and surface water quality modeling approaches for total maximum daily load (TMDL), wasteload allocation (WLA), and nutrient criteria development.
- Research the integration of policy and science in TMDL decision-making and quantification of the uncertainty associated with watershed management decisions through the use of Bayesian Decision Networks.
- Determine the utility of watershed modeling tools to assist in meeting requirements of the Clean Water Act through water quality trading.

PROFESSIONAL ACTIVITIES

Editorial:

Associate Editor WIREs Water (2018 – current)

Reviewer:

Journals

Water Resources Research
Hydrology and Earth Systems Science
Geophysical Research Letters
Journal of Geophysical Research - Biogeosciences
Ecohydrology
Hydrological Processes
Journal of Hydrology
River Research and Applications

ASCE Journal of Environmental Engineering
Journal of American Water Resources Association
Journal of Environmental Science and Health, Part A
Journal of Hydrological Engineering
Canadian Water Resources Journal
Limnologica

Government Documents

United States Geological Survey Papers/Reports
USEPA Technical Documents

Proposal Reviews/Panels/Project Reviews

National Science Foundation (EAR Hydrologic Sciences/CAREER/Polar/EPSCoR Programs)
Department of Energy
Oregon Sea Grant Administration
NWO Research Council for Earth and Life Sciences
Leverhulme Trust
California Fish and Wildlife Service

Invited Lectures/Presentations:

21. **2019** –Fall American Geophysical Union. Neilson, B.T., M.B. Cardenas, M. O'Connor, T.V. King, M.T. Rasmussen, R.M. Cory, GW Kling. “The role of groundwater dynamics on carbon export from continuous permafrost watersheds” December, 2019. San Francisco, CA.
20. **2019** –3rd McGill Northern Research Day Symposium. Neilson, B.T. “Impacts of Changing Climate and Water Resources in the Far North” McGill University. January, 2019. Montreal, Quebec.
19. **2019** – Department of Earth and Planetary Sciences Seminar. Neilson, B.T. “Impacts of Changing Climate and Water Resources in the Far North” McGill University. January, 2019. Montreal, Quebec.
18. **2018** –Department of Geography Seminar. Neilson, B.T. and T.V. King. “The role of hydrologic variability in understanding Arctic river temperature” University of Zurich. June, 2018. Zurich, Switzerland.
17. **2017** –Toolik All Scientists Meeting. Neilson, B.T., T.V. King, M.T. Rasmussen, D.L. Kane, L. Overbeck, R.M. Cory, G.W. Kling, J. Dobkowski, M.B. Cardenas, M. O’Connor. “Connecting hillslope and riparian processes to arctic stream and river responses.” January, 2017. Portland, OR.
16. **2016** -Distinguished Lecture Series, Department of Geology, Utah State University. Neilson, B.T. “Understanding Groundwater Influences in Streams and Rivers.” October, 2016. Logan, UT.
15. **2016** - K. Douglas Nelson Colloquium Series, Department of Earth Sciences, Syracuse University. Neilson, B.T. “Permafrost and Beaver Dam Complexes: How do they influence river temperature and the role of groundwater exchanges?” November, 2016. Syracuse, NY.
14. **2016** - Geological Society of America Annual Meeting. Neilson, B.T. “Roles of Groundwater/Surface Water Exchanges in Arctic Stream and River Temperature” September, 2016. Denver, CO.
13. **2016** – Colorado River Basin Salinity Control Forum, Work Group Meeting. Neilson, B.T. “Influences of Pah Tempe Hot Springs Removal on Downstream Temperature Regimes.” April 2016. Salt Lake City, UT.
12. **2015** – University of New South Wales, Water Research Laboratory. Neilson, B.T. “Influences of Groundwater/Surface Water Interactions on Instream Responses.” February 2015. Sydney, Australia.

11. **2014** – University of Copenhagen. Neilson, B.T. "Influences of Increased Riparian Thaw Depths on Stream Temperatures and Chemical Export in Beaded Arctic Streams." November 2014. Copenhagen, Denmark.
10. **2014** - KTH Royal Institute of Technology. Neilson, B.T. "Influences of Increased Riparian Thaw Depths on Stream Temperatures and Chemical Export in Beaded Arctic Streams." October 2014. Stockholm, Sweden.
9. **2012** - American Geophysical Union Fall Meeting. Neilson, B.T. "Roles of heat transport in transient storage modeling" December, 2012. San Francisco, CA.
8. **2012** - American Geophysical Union Fall Meeting. Neilson, B.T. "Determining key heat fluxes necessary for instream temperature predictions" December, 2012. San Francisco, CA.
7. **2011** - Geological Society of America Annual Meeting. Neilson, B.T., Bandaragoda, C., Chapra, S.C., Stevens, D.K., Schmadel, N.M., Bingham, Q.G., Neale, C.M.U., and Cardenas, M.B., "Use of instream heat budgets and supporting data for predicting surface and subsurface transient storage influences" October, 2011. Minneapolis, MN.
6. **2010** - United States Geological Survey. Neilson, B.T. "Using temperature and solute information to investigate the influences of transient storage and surface water/groundwater interactions on instream processes." September 2010. Salt Lake City, UT.
5. **2009** - NOAA-National Weather Service, Office of Hydrologic Development. Neilson, B.T. "Instream temperature predictions and forecasting using the Two-Zone Temperature and Solute (TZTS) model." June 2009. Washington, D.C.
4. **2009** - NOAA-National Weather Service, Alaska-Pacific River Forecast Center. Neilson, B.T. "Two-zone temperature and solute (TZTS) model formulation, data collection, and calibration." March 2009. Anchorage, AK.
3. **2009** - KTH Royal Institute of Technology. Neilson, B.T. "Identifying transient storage zones using solute and temperature observations." October 2009. Stockholm, Sweden.
2. **2009** - Jordan River Symposium, Neilson, B.T. Comments and discussion regarding the effects of physical processes on dissolved oxygen, April 2009. Salt Lake City, UT.
1. **2006** – USEPA, Office of Research and Development, National Risk Management Research Laboratory, Hydrology and Land Use Team Sustainable Environments Branch. Neilson, B.T. "Data collection methodology for two-zone temperature and solute model testing and corroboration." Cincinnati, OH.

Additional Service:

External

Promotion and Tenure External Peer Review (3)

2008 – Current –Universities Council on Water Resources (UCOWR) Delegate

2007– 2018 – American Geophysical Union Water Quality Technical Committee

2009 – 2010 Salt Lake County Watershed Modeling Advisory Committee

2009 – 2012 Jordan River Technical Advisory Committee

American Water Resources Association Annual Water Resources Conference, Baltimore, MD (2006) – Session Moderator

Fall American Geophysical Union Conference, San Francisco, CA (2007) – Session Convener/Moderator

Fall American Geophysical Union Conference, San Francisco, CA (2010) –Session Convener/Moderator (2 different sessions)

Fall American Geophysical Union Conference, San Francisco, CA (2014) –Session Convener

Internal

2019 USU Spring Runoff Conference Organizing Committee

Promotion and Tenure Committees (1 chair (CEE), 3 member (CEE, WATS, PSC), 2 ombudsman (EED, BE))

2017 Presidential Doctoral Research Fellowship Mentoring Panel
2017-2018, Logan River Hydrology Observatory fund raising and establishment
2017-2018, CEE Post-Doc Search Committee
2017, Research Engineer Search Committee Chair
2016-2017, CEE Faculty Search Committee Member
2016, Utah State University Watershed Sciences Faculty Search Committee
2015-2016, CEE Faculty Search Committee Chair
2013-present, CEE Graduate Affairs Committee Member
2012- 2013, CEE Faculty Search Committee Member
2012 – Current – Utah State University Ecology Center Associate
2011, Research Engineer Search Committee
2007-2010, Water Initiative Advisory Committee
1998-2009, Co-Director Environmental Research Management Group, Utah Water Research Laboratory, Utah State University
2008, Research Engineer Search Committee

Conference -

USU Spring Runoff Conference 2007-2014 – Session Moderator, Student Award Competition Coordinator or Committee
USU Spring Runoff Conference 2019- Conference Planning Committee Member

PROFESSIONAL SOCIETIES

- American Geophysical Union – 2006-current
- American Water Resources Association – 2006-current
- American Society for Engineering Education - 2009 - 2015
- American Society of Limnology and Oceanography - 2010 - current
- Geological Society of America - 2011-current
- American Society of Civil Engineers- 2012-current

SCIENTIFIC OUTREACH/MEDIA

2018 National Science Foundation Science 360 Video. Science Now: Episode 56. Based on findings from King et al. 2018 (<https://doi.org/10.1002/2017WR021868>). <https://science360.gov/obj/video/6702b596-2feb-4919-869b-3d2b11f245a4/nsf-science-now-episode-56>

Featured article in Utah State Magazine, Winter 2018 Wonder Applied. “In the balance.”
<https://www.usu.edu/magazine/>

2017 Collaborating partner in Research Experiences for Teachers within the context of “Comp Hydro: Integrating data computation and visualization to build model-based water literacy.” This is a National Science Foundation funded project at Colorado State University where they are seeking collaborators and research projects where teachers can be exposed to research and incorporate current scientific findings into public education curriculum. This includes involving teachers in field work and involving researchers in curriculum development. We hosted a teacher at Toolik Field Station, North Slope, Alaska for two weeks in July 2017, and have worked to help develop their understanding of Arctic hydrology and a week long module for incorporation into a basic Earth Sciences class focused on at risk students.

2016 Authored the “Utah” entry for the U.S. State Department as part of the U.S. Chairmanship of the Arctic Council. This text is published online, and was published in a book (see book chapters above).

King, T.V. and **B.T. Neilson**. 2016 "Utah and the Arctic: From One Desert to Another." U.S. Department of State Web Blog: Our Arctic Nation. 24 Sept. 2016, medium.com/our-arctic-nation/utah-and-the-arctic-from-one-desert-to-another-f2292d66f169#lja67390b. Accessed 23 March 2017.

Featured article in Utah State College of Engineering Magazine:

"Aggies in the Arctic: USU Environmental Engineers Decode Icy Watersheds." *Utah State University College of Engineering. Creating Tomorrow*. 15 Oct. 2016, <http://www.engineering.usu.edu/news/neilson-arctic>.

2015 iUTAH All Hands Sampling on Logan River covered in local news (Herald Journal - https://news.hjnews.com/allaccess/multi-university-project-examines-logan-river/article_62bd224c-8771-58fb-9714-2f6106d2dd7e.html; Utah Public Radio - <http://upr.org/post/scientists-take-snapshot-logan-river>)

STUDENTS

Graduate Students

Bryce Mihalavich, PhD, CEE (Advisor)
Hyrum Tennant, MS, CEE (Advisor)
Eileen Lukens, M.S., CEE (Advisor)
Dane Brophy, M.S., CEE (Advisor)
Tim Clark, M.E., CEE (Advisor)
Beth Ogata, Ph.D., Biology (Committee Member)
Stephen Ferencz, Ph.D., Geosciences, University of Texas at Austin, (Committee Member)
Nick Barrett, PhD, WATS (Committee Member)
Deni Murray, M.S., WATS (Committee Member)
Lindsey Capito, M.S., WATS (Committee Member)
Conor Tyson, M.S., CEE (Committee Member)
Levi Manly, M.S., CEE (Committee Member)
Madison Alger, M.S. CEE (Committee Member)
Ben Sandberg, M.S. CEE (Committee Member)
Amber Jones, Ph.D., CEE (Committee Member)
Drew Stock, M.S., CEE (Committee Member)

Undergraduate Students

Sammy Stubbs, B.S., CEE, Research Assistant/Field Technician 2018-present (Advisor)
Scott Mershon, B.S., CEE, Research Assistant/Field Technician 2018-present (Advisor)
Abbygael Johnson, B.S., CEE, Research Assistant/Field Technician 2018-present (Advisor)

Post-doctoral Fellows

Caleb Buahin 2017-2018 (Co-advisor), 2018-2019 (Advisor)
Evi Sebok, Spring 2017 (Visiting Fellow)
Milada Majerova, 2012-2017 (Advisor)
Justin Heavilin, 2010-2012 (Advisor)
Christina Bandaragoda, 2010-2011 (Advisor)
Said Gabayen, 2009-2010 (Co-Advisor)

Graduated Students

Amber Spackman, M.S., CEE 2008 (Committee Member)
Molly VanAppledorn, M.S., Department of Watershed Sciences 2008 (Committee Member)
Noah Schmadel, M.S., CEE 2009 (Advisor)

Jonathan Bingham, M.S., CEE 2009 (Advisor)
Kelli Goodman, Ph.D., Biology 2010 (Committee Member)
Quin G. Bingham, M.S., CEE 2010 (Advisor)
Andrew Hobson, B.S., CEE, Research Assistant, 2007-2010, URCO 2010 Recipient (Advisor)
Madeline Merck, M.S., CEE, Spring 2011 (Advisor)
Oscar Marquina, B.S. CEE, Research Assistant, 2008-2011, EURP 2010 Recipient, Undergraduate
Researcher of the Year (2011) (Advisor)
Camilla Lyman/Snow, B.S. CEE, USU Undergraduate Research Fellow, 2008-2012 (Advisor)
Andrea Olsen, B.S. BE, Undergraduate Teaching Fellow CEE 3670 Spring 2012 (Advisor)
Tracy Bowerman, Ph.D., Department of Watershed Sciences Fall 2012 (Committee Member)
Andrew Hobson, M.S., CEE 2013 (Advisor)
Howard Cordingley, B.S. BE, Undergraduate Teaching Fellow (UTF) CEE 3670 Spring 2013 (UTF of the
Year Award, College of Engineering 2013) (Advisor)
Ben Miller, M.S., Ecology and Evolutionary Biology, U Michigan (Committee Member) Spring 2014
Trinity Stout, B.S., CEE and Watershed Sciences, Research Assistant, 2013-2014, EURP 2013-2014
Recipient, Spring 2014 (Advisor)
Florence Consolati, M.S., Department of Watershed Sciences, Spring 2014 (Committee Member)
Camilla Lyman/Snow, M.S., CEE Spring 2014 (Advisor)
Lisa Welsh, Ph.D., Department of Environment and Society Spring 2014 (Committee Member)
Sherissa Ward, B.S. BE, Undergraduate Teaching Fellow (UTF) CEE 3670 Spring 2014 (Advisor)
Logan Elmore, M.S., Department of Watershed Sciences Fall 2014 (Committee Member)
Noah Schmadel, Ph.D., CEE Fall 2014. Outstanding Student Paper, American Geophysical Union Fall
Meeting, Hydrology Section, December 2013, First Place in Student Oral Presentation, Utah
State University Spring Runoff Conference, April 2009, AWWA Intermountain Water Quality
Student Section Linda Moss Scholarship, April 2008, Utah State University Engineering
Scholarship, Fall 2008 (Advisor)
Hayden Campbell, B.S., Biochemistry, Research Assistant, 2012- 2015 (Co-Advisor with M. Baker
Biology)
Stetson Bassett, B.S., CEE, Research Assistant, 2014-2015 (Co-Advisor with Ian Gowing UWRL)
Jonna van Opstal, Ph.D., CEE, Fall 2015 (Committee Member)
Chelsea Stewardson, M.S., CEE, Spring 2016 (Committee Member)
Sarah Baldwin, B.S. BE, Undergraduate Teaching Fellow (UTF) CEE 3670 Spring 2016 (Advisor)
Jeff Watson, M.S., Geosciences, University of Texas at Austin, Spring 2016 (Committee Member)
Mitchell Rasmussen, B.S. CEE, Research Assistant/ NSF REU Arctic LTER, 2014-2016 (Advisor)
Trinity Stout, M.S., CEE, Spring 2017 (Advisor)
Zach Jensen, B.S. BE, Teaching Assistant CEE 3670 Spring 2017 (Advisor)
Darcie Christensen, B.S. BE, Undergraduate Teaching Fellow (UTF) CEE 3670 Spring 2017 (Advisor)
Arin Towns, B.S., iFellow/Research Assistant, CEE Summer 2017 (Co-Advisor)
Rezaul Haider, M.S., CEE, Fall 2017 (Advisor)
Caleb Buahin, Ph.D., CEE, Fall 2017 (Committee Member)
Jessica Wood, M.S., CEE, Fall 2017 (Academic Advisor, Committee Member)
Jared Richens, M.S., CEE Fall 2017 (Committee Member)
Hyrum Tenant, B.S., CEE, USU Undergraduate Research Fellow, USU COE and CEE Undergraduate
Researcher of the Year 2017, URCO Grant 2017 Recipient, EURP Grant 2016 Recipient, Research
Assistant, 2014-2018 (Advisor)
Nikki Quinney, B.S., Research Assistant, CEE, 2017-2018 (Advisor)
Bethany Jensen, B.S. BE, Undergraduate Teaching Fellow, CEE 3670 Spring 2018, (UTF of the Year
Award, College of Engineering 2018) (Advisor)
Adam Talbot, B.S. BE, Teaching Assistant CEE 3670 Spring 2018 (Advisor)
Ian Wadsworth, B.S. BE, Undergraduate Teaching Fellow CEE 3670 Spring 2018 (UTF of the Year
Award, College of Engineering 2018) (Advisor)
Hyrum Tennant, B.S. CEE, Teaching Assistant CEE 3460 Spring 2018 (Advisor)
Sebastian Munoz, B.S., Research Assistant/Field Technician, Geosciences (UT Austin), 2017-2018 (Co-
Advisor)
Tyler King, Ph.D., CEE, 2018. Geologic Society of America Research and Travel Grant Recipient 2017,
Outstanding Graduate Scholar Engineering 2017, USU Student Research Symposium Graduate

Oral Presentation Award 2017, USU Spring Runoff Conference Outstanding Poster
Presentation Award 2017, USU Civil and Environmental Engineering Graduate Student
Researcher of the Year 2016, Outstanding Student Presentation Award Fall American
Geophysical Union 2015 (Advisor)

Julie Kelso, Ph.D., Biology, Fall 2018 (Committee Member)
Makail Swan, B.S., BE, Research Assistant/Field Technician 2018 (Advisor)
Makenzi Beltran, M.S., CEE Fall 2018 (Committee Member)
Darcie Christensen, M.E., CEE Spring 2019 (Committee Member)
Tian Gan, Ph.D., CEE Spring 2019 (Committee Member)
Mike O'Connor, Ph.D., Geosciences, University of Texas at Austin, Spring 2019 (Committee Member)
Tony Melcher, Ph.D., CEE Spring 2019 (Committee Member)
Dane Brophy, B.S., Geology, USU College of Science Minigrant Recipient, Research Assistant/Field
Technician 2017-2019 (Advisor)
Tim Clark, B.S. CEE, Undergraduate Teaching Fellow CEE 3430 Spring 2019 (Advisor)
Todd Keniry, B.S. CEE, Undergraduate Teaching Fellow CEE 3430 Spring 2019 (Advisor)

Other Advising/Mentoring:

Patrick Strong, Research Engineer, 2017- current (Advisor)
Milada Majerova, Researcher, 2015-2018 (Advisor)

TEACHING

University

- CEE 6930 - Surface Water Quality Modeling, Spring 2006, 2008, 2009
- CEE 6740 - Surface Water Quality Modeling/Environmental Quality Modeling 2010-2013, 2015-2016, 2018, 2019
- CEE 3670 - Transport Phenomena, Spring 2011-2014, 2016-2018
- CEE 6800 – Water and Environmental Seminar, Fall 2017
- CEE 3430 – Hydrology, Spring 2018 (Co-taught D. Tarboton), Spring 2019
- **Workshops**
 - Assisted Dr. Joe Wheaton with “Partnering with Beaver in Restoration” workshop, Fall 2012.
 - Iraqi Agriculture Extension Revitalization Training
 - Introduction to Water Quality, January 2008 (5 day workshop)
 - Introduction to Water Quality Modeling, April 2008 (1.5 day of 5 day workshop)
 - USEPA Targeted Watersheds Grant Water Quality Trading Workshop, Fall 2007 (1 day)
 - Co-taught USEPA BASINS/HSPF Trainings (4.5 day workshops)
 - Chicago, IL - February 2003
 - Santa Clara, CA - October 2003
 - Athens, GA - June 2004
 - Santa Clara, CA - September 2004
 - New York, NY - January 2005
 - Santa Clara, CA – October 2005
 - Santa Clara, CA – June 2006
 - Atlanta, GA – November 2006
 - Santa Clara, CA – June 2007
 - Atlanta, GA – October 2007
 - BASINS/HSPF Training (3 day workshop for WK Dickson)
 - Raleigh, NC – August 2005
 - BASINS Training
 - St. Croix, USVI - Aug 2004.
 - Co-taught BASINS Trainings at Utah State University (5 day workshops)
 - Quarterly from 1999-2002
 - March 2003
 - May 2004
 - Co-taught Preconference Workshop on HSPF at ASAE TMDL Conference - Nov 2003

- Co-taught CEE 6930 - Water quality modeling in EPA BASINS - 1999