TYLER VICTOR KING, PhD

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EDUCATION

Postdoctoral Research Assistant, Logan, Utah – Sept 2018 – Feb 2019: Civil and Environmental Engineering

PhD Utah State University, Logan, Utah – Aug 2018: Civil and Environmental Engineering, "Quantifying Dominant Heat Fluxes in an Arctic Alaskan River with Mechanistic River Temperature Modeling"

M.S. University of New Hampshire, Durham, New Hampshire – Dec 2013: Hydrology, "Thermal Implications of Hydropeaking Activity in Regulated Arctic Rivers"

B.S. University of New Hampshire, Durham, New Hampshire – May 2010: Environmental Science

Research EXPERIENCE

2023-Present	Research Hydrologist, US Geological Survey, Idaho Water Science Center, Boise, ID
2019-2023	Hydrologist, US Geological Survey, Idaho Water Science Center, Boise, ID
2018-2019	Postdoctoral Research Assistant, Utah State University, Logan, UT.
2016-2018	Doctoral Research Assistant, Utah State University, Logan, UT.
2013-2016	Presidential Doctoral Research Fellow, Utah State University, Logan, UT.
2011-2012	Masters Student, University of New Hampshire, Dept. Earth Science, Durham, NH
2010-2011	Fulbright Student, Norwegian University of Science and Technology, Trondheim, Norway
2009	Student Researcher, Alaska Pacific River Forecasting Center, Anchorage, AK

AREAS OF EXPERTISE

Remote sensing in hydrology -

- Continental scale satellite remote sensing of water clarity, trophic state, and temperature
- Algal taxa identification from hyperspectral satellite imagery
- Automated near-real time early warning system of algal blooms from satellite imagery
- River discharge estimation from aerial imagery coupled with 1-D open channel flow models
- Photogrammetric channel geometry from aerial imagery

Mechanistic river temperature modeling -

- Numerical modeling of river temperatures in high latitude regions
- Determination of dominant heat fluxes for evaluation of climate change projections
- Evaluation of spatial and temporal impacts of hydropower production on river temperatures

Hydroinformatics -

- Automated image processing pipelines design and deployment
- Management of large (400+ TB) hydrologic and remote sensing datasets
- Relational database construction and management
- Cloud computing (AWS, GEE, HTC)

Remote sensing data procession -

- Google Earth Engine App Development (https://rs-algal-blooms.users.earthengine.app/)
- Reproducible Workflow Creation (https://code.usgs.gov/tvking/tvking)
- Cloud-based Aquatic Atmospheric Correction (https://code.chs.usgs.gov/ctek/applications/ngwos)
- Cloud (AWS Lambda) and on-prem (chron) process automation
- API access with object-oriented coding (R, Python, Bash, FORTRAN, MATLAB, JavaScript)

PEER REVIEWED PUBLICATIONS

Refereed Journal Articles:

Published

1. Meyer, M.F., Topp, S.N., **King, T.V.**, Ladwig, R., Pilla, R.M., Dugan, H.A., Eggleston, J.R., Hampton, S.E., Leech, D.M., Oleksy, I.A., Ross, J.C., Ross, M. R.V., Woolway, R.I., Yang, X., Brousil, M.R., Fickas, K.C., Padowski, J.C., Pollard, A.I., Ren, J., & Zwart, J.A. (2024). *National-scale remotely sensed lake trophic state from 1984 through 2020*. Scientific Data, 11(1), 77. https://doi.org/10.1038/s41597-024-02921-0

2. Stengel, V.G., Trevino, J.M., **King, T.V.**, Ducar, S.D., Hundt, S.A., Hafen, K.C., & Churchill, C.J. 2023. *Near real-time satellite detection and monitoring of aquatic algae and cyanobacteria: How a combination of chlorophyll-a indices and water-quality sampling was applied to north Texas reservoirs*. Journal of Applied Remote Sensing, 17(04). https://doi.org/10.1117/1.JRS.17.044514

3. **King, T.V.,** Stengel, V.G., Shultz, A., Welborn, T. 2022. *The Remote Aquatic Chlorophyll Tracker (REACT)* Web application https://webapps.usgs.gov/react/

4. Legleiter, C.J., **T.V. King**, K.D. Carpenter, N.C. Hall, A.C. Mumford, T. Slonecker, J.L. Graham, V.G. Stengel, N. Simon, and B.H. Rosen, 2022. *Spectral Mixture Analysis for Surveillance of Harmful Algal Blooms (SMASH): A Field-, Laboratory-, and Satellite-Based Approach to Identifying Cyanobacteria Genera from Remotely Sensed Data*. Remote Sensing of Environment 279:113089 https://doi.org/10.1016/j.rse.2022.113089

5. **King, T.V.**, Hundt, Hafen, Ducar, and Stengel, 2022 *Mapping probability of freshwater algal blooms with various univariate and multivariate spectral indices and sources of training data Journal of Applied Remote Sensing*. 2022 https://doi.org/10.1117/1.JRS.16.044522

6. **King, T.V.**, S. Hundt, A. Simonson, and K. Blasch. 2022. *Evaluation of Select Velocity Measurement Techniques for Estimating Discharge in Small Streams across the United States.* JAWRA Journal of the American Water Resources Association 1–21. doi.org/10.1111/1752-1688.13053

7. **King, T.V.**, B.T. Neilson, L.D. Overbeck, D.L. Kane. 2020. *A distributed analysis of lateral inflows in an Alaskan Arctic watershed underlain by continuous permafrost.* Hydrological Processes. 2020; 34: 633– 648. https://doi.org/10.1002/hyp.13611.

8. Li, A., Aubeneau, A.F., **King, T.V**., Cory, R.M., Neilson, B.T., Bolster, D., & Packman, A.I. 2019. *Effects of vertical hydrodynamic mixing on photomineralization of dissolved organic carbon in arctic surface waters*. Environmental Science: Processes & Impacts, 21(4), 748-760. doi:10.1039/C8EM00455B

9. **King, T. V.**, & 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. https://doi.org/10.1029/2018WR023463

10. Neilson, B.T., M.B. Cardenas, M.T. O'Connor, M.T. Rasmussen, **T.V. King**, & G.W. Kling. 2018. *Groundwater flow and exchange across the land surface explain carbon export patterns in continuous permafrost watersheds.* Geophysical Research Letters, 45, 7596–7605. https://doi.org/10.1029/2018GL078140

11. **King, T.V.**, 2018 *Quantifying Dominant Heat Fluxes in an Arctic Alaskan River with Mechanistic River Temperature Modeling* Dissertation. 7224. *doi.org/10.26076/035b-f7cd*

12. **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. doi: 10.1002/2017WR021868

13. **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, doi:10.1002/2015WR017965.

14. Bakken, T.H., **T.V. King**, and K. Alfredsen 2016, *Simulation of river water temperatures during various hydro-peaking regimes.* Journal of Applied Water Engineering and Research, 1-13, doi: 10.1080/23249676.2016.1181578.

In Review

15. **King, T.V.**, and Yoder, A.M., *Water quality modeling results of total phosphorus for the lower Boise River near Parma, Idaho 2002 - 2021*: U.S. Geological Survey Scientific Investigation Report

16. **King, T.V.**, Bean, R.A., Walton-Day, K., Mast, M.A., Gohring, E.J., Gidley, R.G., Day, N.K., Gibney, N.D., *Remote Sensing of Chlorophyll a and Temperature to Support Algal Bloom Monitoring in Blue Mesa Reservoir, Colorado*. Journal of the American Water Resources Assocition

17. **King, T.V.,** Mast, M.A., Bean, R.A., and Gohring, E.J., 2024, Remotely sensed and in-situ chlorophyll a and temperature data from Blue Mesa Reservoir, Colorado, U.S. Geological Survey Data Release, https://doi.org/10.5066/P9XULQAS

18. **King, T.V.**, Wakefield, B.F., Hundt, S.A., Hafen, K.C., Meyer, M.F., Avouris, D.M., Ducar, S.D., Ball, G.P., Stengel, V.G., and Vanhellemont, Q, 2023, Aquatic reflectance imagery product derived from Sentinel-2 for the conterminous United States: U.S. Geological Survey data release, https://doi.org/10.5066/P904243C

Data Releases

19. **King, T.V.**, and Yoder, A.M., 2023, *Water quality modeling results of total phosphorus for the lower Boise River near Parma, Idaho 2002 - 2021*: U.S. Geological Survey data release, https://doi.org/10.5066/P98DMTAN

20. Meyer, M.F., S.N. Topp, **T.V. King**, R. Ladwig, R.M. Pilla, H.A. Dugan, J.R. Eggleston, S.E. Hampton, D.M. Leech, I.A. Oleksy, J.C. Ross, M.R. Ross, R.I. Woolway, X. Yang, M.R. Brousil, K.C. Fickas, J.C. Padowski, A.I. Pollard, J. Ren, and J.A. Zwart. 2023. *National-scale, remotely sensed lake trophic state (LTS-US) 1984-2020* ver 1. Environmental Data Initiative. https://doi.org/10.6073/pasta/212a3172ac36e8dc6e1862f9c2522fa4

21. Bittmann, B.M., **King, T.V.**, Kaiser, K.E., and Molloy, C.M., 2023, A Harmonized Discharge Record for Select Tributaries to the Lower Boise River, Southwestern Idaho, 1986-2022: U.S. Geological Survey data release, https://doi.org/10.5066/P93MAQA8

22. **King, T.V.**, & Hafen, K.C., 2022. *Chlorophyll-a concentrations and algal bloom condition paired with Sentinel-2 aquatic reflectance values collected for Brownlee Reservoir, ID from 2015 through 2020* U.S. Geological Survey data release. https://doi.org/10.5066/P9GF0CBG

23. Hundt, S.A., **King, T.V.**, and Simonson, A.E., 2021, *Measurements of Discharge in Small, Low-Flowing Streams Using Multiple Techniques*: U.S. Geological Survey data release, *doi.org/10.5066/P9SOIRJ7*

24. Carpenter, K.D., Mumford, A.C., Legleiter, C.J., and **King, T.V.**, 2021, *Phytoplankton identification and biovolume data for field samples from Detroit Lake, Oregon, collected in August 2019 and August 2020*: U.S. Geological Survey data release, doi.org/10.5066/P9F8HOYG

PROFESSIONAL PRESENTATIONS (2014-Current)

First Author

1. **King, T.V.**, Meyer, M.F., Garret, J., 2023 "Using Satellite Based Observations for Water Quality Monitoring" USGS National Water Data Training Workshop, Phoenix
2. **King, T.V.,** Walton-Day, K., Mast, M.A., Gohring, E.J., Gidley, R.G., Gibney, N.D. 2023 "Remote Sensing and Field Verification of Harmful Algal Blooms at Blue Mesa Reservoir" 8th Interagency Conference on Research in the Watershed (ICRW8), Corvallis
3. **King, T.V.,** 2023 "Introducing REACT: the REmote Aquatic Chlorophyll-a Tracker" Idaho Department of Environmental Quality Water Quality Workshop
4. **King, T.V.**, A.M. Yoder, "Monitoring Success: An overview of the status and trends of phosphorus and sediment in the lower Boise River and select tributaries". 2022. Idaho Chapter American Water Resources Association Seminar Series.
5. **King, T.V.** "Spectral Mixture Analysis for Surveillance of Harmful Algal Blooms (SMASH): A Hybrid Laboratory- and Satellite-Based Remote Sensing Approach to Characterizing a Critical Aspect of Water Quality in Inland Water Bodies", 2021, American Geophysical Union Annual Meeting. IP-131998, August 2021
6. **King, T.V.**, "Evaluation of Low-Flow Discharge Measurement Methods" 2021 Idaho Department of Environmental Quality Water Quality Workshop, Boise, Idaho, 2021
7. **King, T.V.,** "Remote Sensing of Water Quality". 2021. Oklahoma Clean Lakes and Watershed Association, 2021. IP-131079, July 2021. **Invited**
8. **King, T.V.,** "Spectral Mixture Analysis for the Surveillance of Harmful Algal Blooms (SMASH)" Data Science and Open Science Virtual Summit, 2022. IP-131998, August 2021
9. **King, T.V.**, S. Hundt, J. Garrett "Introduction of a satellite overpass calendar tool to facilitate in-

situ/remote sensing matchups". 2021. USGS Water Mission Area Webinar, June 30 2021. **Noteworthy** because of the broad USGS WMA audience.

10. **King, T.V.**, "Remote Sensing River Temperature". 2021. Joint USGS, NASA, Brazilian Water Authority Meeting on Remote Sensing of Water, September 2021. **Invited**
11. **King, T.V.**, "Remote Sensing of Algal Blooms in Small Inland Waterbodies". 2021. NOAA Disater Preparedness Program and the Coastal Response Research Center, Harmful Algal Bloom (HAB) Preparedness & Response Workshop, April 27 -28 2021. **Invited**
12. **King, T.V.**, "Remote Sensing of Algal Blooms in Idaho". 2020. USGS Water Mission Area Webinar, July 10 2020. **Noteworthy** because of the broad USGS WMA audience.
13. **King, T.V.**, "Periphyton 101: The Lower Boise River". 2020. Boise River Enhancement Network seminar series, 2020. **Invited**
14. **King, T.V.**, "High-Resolution Satellite Remote Sensing of Algal Blooms in Idaho". 2020. Idaho Water Resources Research Institute Seminar Series, October 2020, Boise, Idaho. **Invited**
15. **King, T.V.**, "Ten Dollar, Ten Minute Discharge Measurements" 2019 Idaho Department of Environmental Quality Water Quality Workshop, Boise, Idaho. IP-113337, October 2019
16. **King, T.V.**, "Satellite Based Algal Bloom Detection in Idaho" Idaho Department of Environmental Quality Water Quality Workshop, Boise, Idaho, 2019. IP-113338, October 2019
17. **King, T.V.**, B.T. Neilson. "Characterization of Spatial Heterogeneity in River Temperatures in a Tundra River Using Thermal Infrared Imagery" February, 2019. Toolik Field Station All Scientist Meeting, Portland, OR.
18. **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 Dec 10-14 2018. Washington, DC.
19. **King, T.V.**, B.T. Neilson. "Identifying Source Areas of Flow and Heat in the Kuparuk River Basin, Alaska" 2018 Annual Meeting, Geological Society of America, November 4-7. Indianapolis, IN.
20. **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." February, 2018. Arctic Long Term Ecological Monitoring Station Annual Meeting, Woods Hole, MA
21. **King, T.V.**, B.T. Neilson L. D. Overbeck*, M.T. Rasmussen*, D.L. Kane. "Intra-Basin Variability in Lateral Flow and Runoff Generation Over Continuous Permafrost" 2017 Fall Meeting, American Geophysical Union, December 11-15, 2017. Abstract C22F-01. New Orleans, LA.
22. **King, T.V.**, B.T. Neilson. "Investigating the Thermal Impacts of Hyporheic Exchange in an Alluvial Arctic River" 2017 Annual Meeting, Geological Society of America, October 22-25 2017. Seattle, WA.
23. **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.
24. **King, T.V.**, B.T. Neilson. "Estimating River Discharge from Aerial Imagery" April, 2017. Utah State University Student Research Symposium. Logan, UT.
25. **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.
26. **King, T.V.**, B.T. Neilson. "Estimating River Discharge from Aerial Imagery" February, 2017. Arctic Long Term Ecological Monitoring Station Annual Meeting, Woods Hole, MA
27. **King, T.V.**, B.T. Neilson, D.L. Kane, L.D. 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.
28. **King, T.V.**, B.T. Neilson, M.T. Rasmussen*, L.D. Overbeck*, D.L. Kane. 2016. "Water Temperature Controls in Low Arctic Rivers." Invited talk at Max Planck Institute for Biogeochemistry, June 22,

2016. Jena, Germany.

29. **King, T.V.**, B.T. Neilson, M.T. 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 20-24, 2016. Abstract 565. Potsdam, Germany.

30. **King, T.V.**, B.T. Neilson, A. Jensen, A. Torres-Rua, M. Winkelaar, M.T. Rasmussen*. 2016. "High Resolution Channel Geometry from Repeat Aerial Imagery." Utah State University Graduate Research Symposium, April 14, 2016. Logan, UT.

31. **King, T.V.**, B.T. Neilson, A. Jensen, A. Torres-Rua, M. Winkelaar, M.T. 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)

32. **King, T.V.**, B.T. Neilson, D.L. Kane, L.D. Overbeck*, M.T Rasmussen.* "Controls on Arctic River Temperatures: A Delicate Balance." April 2015. Utah State University Student Research Symposium 2015. Logan, UT.

33. **King, T.V.**, B.T. Neilson, A. Jensen, A. Torres-Rua, M. Winkelaar, M.T. Rasmussen*. 2015. "High Resolution Channel Geometry from Repeat Aerial Imagery." April, 2016. Arctic Long Term Ecological Monitoring Station Annual Meeting, Woods Hole, MA

34. **King, T.V.**, B.T. Neilson, L. D. Overbeck*, M.T. Rasmussen*, D.L. Kane. "Spatial and Temporal Variability in Dominant Heat Fluxes in Arctic Rivers." February, 2015. Arctic Long Term Ecological Monitoring Station Annual Meeting, Woods Hole, MA

35. **King, T.V.**, B.T. Neilson, L.D. Overbeck*, M.T. 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.

36. **King, T.V.**, B.T. Neilson, L.D. Overbeck*, D.L. Kane. "Preliminary Identification of Important Heat Fluxes in Rivers in Arctic Alaska" April, 2014. Utah State University Spring Runoff Conference 2014. Logan, UT.

37. **King, T.V.**, B.T. Neilson, L.D. Overbeck*, D.L. Kane. "Preliminary Identification of Important Heat Fluxes in Rivers in Arctic Alaska" February, 2014. Arctic Long Term Ecological Monitoring Station Annual Meeting, Woods Hole, MA

Co-Author

38. Stengel, V., C. Churchill, **T.V. King**, "Earth observation monitoring of algal blooms in Oklahoma and Texas reservoirs" Pecora Conference 2022, Denver, CO. IP-139062, March 2022

39. Welk, R., **T.V. King**, "Spatially Distributed Bias Correction of Provisional Landsat 8 Collection 2 Surface Temperature Products in Rivers, Streams, Lakes, and Reservoirs" Pecora Conference 2022, Denver, CO. IP-140015, April 2022

40. Stengel, V., **T.V. King** "Earth observation monitoring of algal blooms in Oklahoma and Texas reservoirs" 2022 Pecora Conference 2022, Denver, CO. IP-139062, March 2022

41. Yoder, A.M., **T.V. King** "High Frequency Total Phosphorus Observations from the Lower Boise River" Idaho Department of Environmental Quality Water Quality Workshop, Boise, Idaho, 2021. IP-135163, December 2021

42. Hall, N., C.J., Legleiter**, T.V. King**, A. Mumford, T. Slonecker, K. Carpenter, S. Spaulding "Monitoring of harmful algal blooms (HABs) using hyperspectral remote sensing" Klamath Basin Monitoring Program Annual Meeting. IP-133117, September 2021.

43. Hafen, K., **T.V. King** "Identifying Potentially Resolvable National Hydrography Dataset Waterbodies and Flowlines from Landsat Imagery", 2021, American Geophysical Union Annual Meeting. IP-132012, August 2021.

44. Simonson, A., **T.V. King**, S. Hundt, K. Blasch "Field Testing Conventional USGS and Alternative Stream Gaging Method for Low Flows in Multiple Stream Environments" 2019 USGS National Data

Workshop

45. Cory, R.M., **T. King**, B.T. Neilson, G.W. Kling. Controls on fluxes of labile DOC from the Kuparuk River to the Arctic Ocean. POLAR2018 SCAR/IASC Open Science Conference, June 2018. Davos, Switzerland.
46. Neilson, B.T., **T.V. King**, M.T. Rasmussen*, D.L. Kane, L.D. Overbeck*. The role of hydrologic variability in understanding Arctic river temperature. POLAR2018 SCAR/IASC Open Science Conference, June 2018. Davos, Switzerland.
47. 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
48. Li, A, A. Aubeneau, **T.V. 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.
49. Neilson, B.T., **T.V. King**, N.M. Schmadel, J. Heavilin, L.D. 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.
50. 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.
51. 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.
52. 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." 2015 Society for Freshwater Science Annual Meeting, May 17-21, 2015. Milwaukee, WI.
53. 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.
54. 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.

where *=mentored student

PROFESSIONAL ACTIVITIES

Invited Lectures/Presentations:

2023 Remote sensing of water temperature. American Fisheries Society, Western Division Annual meeting

2023 Boise State University, Biogeochemistry "*Remote Sensing of Bio-Geo-and Chemistry"* Boise, ID

2022 Remote sensing of water temperature. Society for Freshwater Science, North West Chapter Annual meeting, Caldwell, ID

2021 Remote Sensing of Algal Blooms in Small Inland Waterbodies. 2021. NOAA Disater Preparedness Program and the Coastal Response Research Center, Harmful Algal Bloom (HAB) Preparedness & Response Workshop

2021 Remote Sensing River Temperature. Joint USGS, NASA, Brazilian Water Authority Meeting

2021 Remote Sensing of Water Quality. Oklahoma Clean Lakes and Watershed Association

2020 Periphyton 101: The Lower Boise River. 2020. Boise River Enhancement Network seminar series

2020 High-Resolution Satellite Remote Sensing of Algal Blooms in Idaho. 2020. Idaho Water Resources Research Institute Seminar Series, October 2020

2018 Utah State University, Hydrology "*Introduction to Discharge Measurements*" Logan, Utah, USA

2017 Utah State University, Remote Sensing of Land Surfaces "*The view from here: Remote Sensing in Climate Change*" Logan, Utah, USA

2016 Max Planck Institute of Biogeochemistry. "*Water Temperature Controls in Low Arctic Rivers*" Jena, Germany.

Academic Reviewer:

2018, 2019, 2022 (2x), 2023 (2x)	Water Resources Research
2022	Journal of the American Water Resources Association
2023	Toxics
2023 (2x)	Remote Sensing
2022, 2023	Environmental Research Letters
2023	NASA
2022	Harmful Algae
2021 (8x), 2022 (4x), 2023 (12x)	USGS
2017	Geophysical Research Letters
2109	Hydrological Processes
2019	Scientific Reports

Conference Session Convener:

2022 Power, Promise and Challenges in Remote Sensing of Water Quality. Oral Session , Pecora, 2022, Denver, CO

2019 A Showcase of Undergraduate Research in Hydrogeology. Poster Sessions at GSA 2019 Annual Meeting, Phoenix, AZ

2018 Water Temperatures in Surface and Subsurface Hydrologic Systems: Controls, Applications, and Implications. Oral and Poster Sessions at GSA 2018 Annual Meeting, Indianapolis, IN

PROFESSIONAL SOCIETIES

2017 – 2023 American Water Resources Association
2017 – 2022 Geological Society of America

2016 – 2020 Permafrost Young Researchers Network
2016 – 2020 United States Permafrost Association
2006 – 2020 American Geophysical Union

SCIENTIFIC OUTREACH

2023 Served on planning committee of Boise Watershed watch, planning educational curriculum for 200+ participants in a one-day multi-site water quality educational program. Also lead Watershed Watch site in 2021, 2022, and 2023 instructing participants in proper water quality sampling technique and leading discussion on results interpretation.

2017 Collaborating partner in Research Experience of Teachers, a National Science Foundation funded projects to incorporate current scientific research into public education curriculum by involving teachers in field work and involving researchers in curriculum development. We hosted a high school teacher at Toolik Field Station, North Slope, Alaska for two weeks in July 2017, working to help develop their understanding of Arctic hydrology. We continued to work with this teacher to develop curriculum for their classes

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 has been published as a printed book.

King, T.V., 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.

AWARDS

2023 USGS STAR Award, Itapúa Brazil Binational International Meeting
2022 USGS STAR Award, Water Mission Area Remote Sensing of Water Quality
2020 USGS STAR Award, NWPI Regional HABs Science Meeting
2017 Geological Society of America Hydrogeology Division Outstanding Graduate Research Proposal
2017 Outstanding Graduate Scholar Award, 2017 USU College of Engineering
2017 Outstanding Poster Presentation Award, 2017 USU Spring Runoff Conference
2016 USU Civil and Environmental Engineering Graduate Student Researcher of the Year 2016
2016 USU Graduate Student Travel Grant
2015 Outstanding Student Paper Award – 2015 AGU Fall Conference
2013 USU Presidential Doctoral Research Fellow
2012 Teaching Assistantship in Earth Science at the University of New Hampshire
2010 Student Fulbright Appointment
2009 NOAA Hollings Scholar
2009 John and Rose Mendelson Kurtz Scholarship
2008 Sidney and Kathleen Samuels Scholarship Fund
2008 New Hampshire Incentive Program Scholarship
2008 Penney Family Scholarship
2007 Glenice Dearborn Scholarship
2006 University of New Hampshire Dean's Scholarship
2006 Message of Hope Award: Ulman Cancer Fund for Young Adults
2006 Kate Harvey Burns Scholarship
2006 General Henry H. Arnold Education Grant Program

TEACHING EXPERIENCE

Instructor:

2023 **Integrating remote sensing into hydrologic observations**, U.S. Geological Survey National Water Data Training Workshop. Taught short course on applied uses of remote sensing in hydrologic monitoring including situational awareness, hazard identification, trend detection, sonde calibration information, evidence to use in records processing, and scientific hypothesis testing.

2022 **Primer on remote sensing of water quality**, Pecora conference short course, Denver, CO. Instructed 3 hr class on the fundamentals of aquatic remote sensing to 50+ professional participants as a remote sensing science conference. Instructions includes theory, lecture, lab, live coding, and question/answer sections.

2018 **Introduction to Hydrologic Modeling**, Utah State University, Intensive English Language Institute. Taught a three day short course on the fundamentals of catchment hydrology and hydrologic modeling to 12 students of Civil and Hydropower Engineering from the Nanchang Institute of Technology as a capstone of a three week Intensive English Language course. Lectured, lead discussions, and facilitated in-class exercises on watershed hydrological modeling using HEC-HMS and inundation modeling using HEC-RAS.

2017 **Introduction to Catchment Hydrology**, Utah State University, Intensive English Language Institute. Taught a two day, six hour, short course on the fundamentals of catchment hydrology to 12 students of Civil and Hydropower Engineering from the Nanchang Institute of Technology as a capstone of a three week Intensive English Language course. Lectured, lead discussions, and facilitated small in-class exercises on watershed delineation, water balance calculations, discharge calculation, rating curve development, and remote sensing of river discharge.

Teaching Assistantships:

2016 CEE 6740 – Surface Water Quality Modeling, Utah State University

2012 ESCI 810 – Groundwater Hydrology, University of New Hampshire

2011 ESCI 354 – Techniques in Environmental Science, University of New Hampshire

2010 CHEM 404 – General Chemistry II, University of New Hampshire

PROFESSIONAL DEVELOPMENT

2021 U.S. Geological Survey Project Management Coaching Program
2019 U.S. Geological Survey Water Quality Methods Course
2018 Reviewing Undergraduate Research and Creative Opportunity Proposals Workshop, Logan, UT
2017 Strong Mentorship for Undergraduates Workshop, Logan, UT
2017 Finding/Applying for Teaching-Focused Higher Ed Positions Workshop, Logan, UT
2017 Tips for Teaching Undergraduate Courses, Graduate Training Series, Logan UT
2015 Write Winning Grants Workshop, Logan, UT
2016 National Science Foundation Arctic Field Training, Logan, UT
2011 National Science Foundation Responsible Conduct of Research, Durham, NH

SERVICE

2023: Graduate faculty at Boise State University, served on thesis committee for Thomas Beers

2023: Served on AquaWatch Australia International Science Advisory Group

2022: Served on planning committee for Watershed Watch 2022, Lead Watershed Watch monitoring site

2021 Watershed Watch: Worked with ~20 5th graders from Rolling Hills Charter School on water quality at Glenwood Bridge.

2021: BSU CE-100: Professional Panel Discussion. Spoke with ~12 undergraduate students in interview setting and ~40 undergraduate students as part of a professional panel.

2022: Serving on AquaWatch Australia International Science Advisory Group

2021: Virtual Classroom Visit: Guest taught ~30 students in 7-8th grade at school in Port Angeles, WA as part of the USGS Virtual Classroom visits pilot program.

2018 Student Advisory Council Chair for the Geological Society of America. In this position, I am responsible for coordinating the activities of GSA's 32 member Student Advisory Council I represent the student advisory council to GSA's Governing Council as a full voting member of Council an participate in biennial Council meetings to guide the development of GSA.

2018 Finding your voice: a discussion of publishing and reviewing academic journal articles. GSA 2018 Annual Meeting. I presented an early career perspective on publishing and reviewing academic articles to students attending the GSA annual meeting. Topics covered include authorship, writing techniques, journal selection, and reviewing as a learning opportunity.

2018 First time attendee orientation for the Geological Society of America's Annual meeting in November 2018. Presented material tailored to first time conference attendees including navigation, conference services, scheduling, and best practices.

2018 Graduate student recruitment presentation. Presented to graduate students recruited by Utah State University on the challenges and opportunities of pursuing a graduate degree. This presentation was requested by the Office of Research and Graduate studies, and focused on the importance of selecting appropriate advisors and mentors.

2017 Student representative to management board of the Hydrogeology Division of the Geological Society of America. Attended monthly meetings to discuss the operation and management of the Hydrogeology Division and provide a student perspective to the management board.

2016 Community night at USU Engineering Week. Developed and hosted a "thermal camera photo booth" where the public were encourage to learn about long wave radiation in the context of personal portraits of themselves.

2015 AmeriCorps through the Utah Conservation Corps, Logan UT. I coordinated and oversaw operations of grooming cross country ski trails in Bear River Mountains, Cache County Utah for Nordic United, a non-profit organization based in Logan, Utah.

2015 Utah Water Research Laboratory 50th anniversary open house. Presented approaches to and results from Arctic hydrology in a context that is meaningful for residents of Cache Valley, Utah through an open house at the Utah Water Research Laboratory.

2014 Public presentation, Kantishna Backcountry Lodge, Denali National Park, Alaska. Presented Arctic hydrology research to guests and staff of a backcountry lodge in Kantishna, Alaska as a guest presenter in their scientific enrichment program at the lodge.

2014 Board member for a 501(c)(3) non-profit in Logan Utah promoting human powered winter recreation in Northern Utah. Organized fundraisers and events, and promoted public forums on policy affecting the management of public lands.