

# Erin C. Seybold

University of Kansas  
Kansas Geological Survey  
Department of Geology  
[erinseybold@ku.edu](mailto:erinseybold@ku.edu) | <http://erinseybold.com/>

## Education

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Ph.D.	Duke University	Ecology	2017
B.A.	St. Olaf College	Biology and Environmental Science	2011

## Professional Appointments

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*Assistant Professor* 2024 – present  
Department of Geology, University of Kansas

*Assistant Scientist* 2019 – present  
Kansas Geological Survey, University of Kansas

*Postdoctoral Associate* 2017 – 2019  
Vermont EPSCoR, University of Vermont

## Research Interests

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Aquatic biogeochemistry, watershed hydrology, groundwater-surface water interactions, critical zone resiliency, effects of anthropogenic change on water quality

## Awards, Fellowships, and Certificates

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Duke University Certificate in College Teaching	2017
NSF-USGS Graduate Research Internship Program Fellow	2016
NSF Graduate Research Fellow	2013 – 2017
Fulbright Scholar	2011
Phi Beta Kappa Member	2011
Goldwater Scholar	2010

## Funded Research Support

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### *Ongoing:*

USGS Powell Center for Analysis and Synthesis: *Critical zone as a mediator of hydroclimate-ecosystem asynchrony*. Co-PI. Funded in 2024; 2-year project.

Kansas Water Office: *Quantitative Analysis of Trends in Kansas' Hydroclimatic Compound Extremes*. Co-PI. Total award amount \$161,879. Funded in 2024; 2-year project.

Kansas Department of Health and the Environment: *Kansas Groundwater Quality Research & Monitoring Network*. PI. Total award amount \$2,000,459. Funded in 2024; years 1 & 2 of 5-year project.

Kansas Water Office: *Groundwater quality patterns, trends, and drivers in Groundwater Management District 2, Kansas*. PI. Total award amount \$45,000. Funded in 2023; 1.5-year project.

NSF EPSCoR: *Emerging STEM Scholar: Building STEM workforce capacity in undergraduates and mentors*. Co-PI. Total award amount \$999,835. Funded in 2022; 5-year project.

USDA NIFA: *Irrigation at the new 100th Meridian: Adaptation to manage climate risks and preserve water resources in the Eastern Kansas River Basin*. Co-PI. Total award amount \$750,000. Funded in 2021; 4-year project.

NSF EPSCoR: *Aquatic Intermittency effects on Microbiomes in Streams (AIMS)*. Co-PI. Total award amount \$6M to KU. Funded in 2020; 4-year project.

NSF Critical Zone Observatories Program: *Collaborative Research - Using Big Data approaches to assess ecohydrological resilience across scales*. PI. KGS Award \$94,675; part of larger \$5M network grant. Funded in 2020; 5-year project.

DOE Environmental System Science Program: *Linking nutrient reactivity and transport in subsurface flowpaths along a terrestrial-estuarine continuum*. Co-PI. \$34,946 to KGS, subaward of larger \$600k grant. Funded in 2020; 3-year project.

*Completed:*

Kansas Water Office: *Groundwater Nitrate Dynamics at the Flickner Innovation Farm*. PI. Total award amount \$15,000. Funded in 2021; 1.5-year project.

Kansas Water Resources Institute: *Spatial variability and subsurface controls of groundwater recharge and nutrient mobilization in dry streams*. PI. Total amount \$40,000. 2020 – 2022.

Kansas Water Resource Institute: *Simulating the effects of reservoir management strategies on in-stream sediment load, streambank stability, and water quality*. Co-PI. Total amount \$30,000. 2020 – 2022.

Kansas Water Office: *Assessment of Groundwater Mineralization in the Upper Arkansas River Corridor*. Co-PI. Total amount \$77,000. 2019 – 2022.

California Sea Grant, Marine Pollution Program: *Linking terrestrial pollution to estuarine water quality: Quantification of the role of groundwater in the transport, transformation and removal of agricultural pollutants in Elkhorn Slough, CA*. Co-PI. Total amount \$243,000. 2019 –2022.

NSF Graduate Research Internship Program Fellowship: *Assessing the influence of redox microzones on whole-stream denitrification rates*. U.S. Geological Survey Office of Groundwater Geophysics Branch. Total amount \$5,000. 2016 - 2017.

NSF Graduate Research Fellowship: *Ecohydrologic controls on carbon cycling: coupling carbon & water at the watershed scale*. Total amount \$178,000. 2013 - 2017.

**Publications** (\*denotes student author)

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Golden HE, Christensen JR, McMillan H, Kelleher CA, Lane CR, Husic A, Li L, Ward AS, Hammond J, **Seybold EC**, Jaeger KL, Zimmer M, Sando R, Jones CN, Segura C, Maloney DT, Price AN, Cheng

F. (In review) Advancing the Science of Headwater Streamflow for Global Water Protection. In review at *Nature Water*.

Stegen J, Burgin A, Busch M, Fisher J, Ladau J, Abrahamson J, Kinsman-Costello L, Li L, Chen X, Datry T, McDowell N, Tatariw C, Braswell A, Deines J, Guimond J, Regier P, Rod K, Bam E, Fluet-Chouinard E, Forbrich I, Jaeger K, O'Meara T, Schiebe T, **Seybold EC**, Sweetman J, Zheng J, Allen D, Herndon E, Middleton B, Painter S, Roche K, Scamardo J, Vander Vorste R, Boye K, Wohl E, Zimmer M, Hondula K, Laan M, Marshall A, Patel K. (In review) Reviews and Syntheses: Variable Inundation Across Earth's Terrestrial Ecosystems. In review at *Biogeosciences*.

Price A, Zimmer M, Bergstrom A, Burgin A, **Seybold EC**, Krabbenhoft C, Zipper S, Busch MH, Dodds W, Datry T, Walters A, Rogosch J, Stubbington R, Walker R, Stegen J, Kaiser K, Messenger M, Olden JD, Godsey S, Shanafield M, Lytle DA, Allen GH, Mims MC, Tonkin JD, Bogan M, Burrows R, Hammond J, Boersma KS, DelVecchia AG, Allen DC, Yu S, Ward A. (In review) Biogeochemical and ecological responses to the wetting of non-perennial streams. In review at *Nature Water*.

Abbott BW, Underwood KL, **Seybold EC**, Kincaid DW, Hamshaw SD, Lee RM, Rizzo DM, Brown B, Toolin R, Chorover J, Li L, Lewis G, Sayedi SS, Hill S, Lewis G, Wood RL, Aanderud Z, Brahney JL, Nixon RS, Wang W, Allsup P, Flox C, Perdrial JN. (In review) Ecological Resilience in the Anthropocene is rooted in Earth stewardship. In review at *Ecological Monographs*.

Montalvo M\*, Grande E, Braswell A, Visser A, Arora A, **Seybold EC**, Tatariw C, Haskins J, Endris C, Gerbl F, Huang M, Morozov D, Zimmer M. (2024) A fresh take: Seasonal changes in terrestrial freshwater inputs impact salt marsh hydrology and vegetation dynamics. *Estuaries and Coasts*. <https://doi.org/10.1007/s12237-024-01392-1>

Kincaid DW, Underwood K, Hamshaw S, Li L, **Seybold EC**, Stewart B\*, Rizzo D, Ul Haq I\*, Perdrial J. (2024) Solute export patterns and links to catchment attributes across the contiguous United States. *Hydrological Processes*. <https://doi.org/10.1002/hyp.15197>

Arora B, **Seybold EC**, Lixin J. 2024. Editorial: Women in critical zone science. *Frontiers in Water*. <https://doi.org/10.3389/frwa.2024.1404317>

Stewart B\*, Shanley J, Matt S, **Seybold EC**, Kincaid DW, Vierbicher A\*, Cable B\*, Hicks N\*, Perdrial J, Li L. (2024) Illuminating the "invisible": Substantial Deep Respiration and Lateral Export of Dissolved Carbon from Beneath Soil. *Water Resources Research*. <https://doi.org/10.1029/2023WR035940>

Swenson L\*, Zipper S, Delaney DM\*, Jones CN, Burgin AJ, **Seybold EC**, Kirk M, Hatley C\*. (2024). Changes in water age during dry-down of a non-perennial stream. *Water Resources Research*. <https://doi.org/10.1029/2023WR034623>

**Seybold EC**, Bergstrom A, Jones CN, Burgin A, Zipper S, Godsey S, Dodds W, Zimmer M, Shanafield M, Datry T, Mazor R, Messenger M, Olden J, Ward A, Yu S, Kaiser K, Shogren A, Walker R. (2023) How Low Can You Go? Widespread Challenges in measuring low stream discharge and a path forward. *Limnology and Oceanography Letters*. <https://doi.org/10.1002/lol2.10356>

Ruckhaus M\*, **Seybold EC**, Underwood K, Stewart B\*, Kincaid D, Shanley JB, Li L, Perdrial J. (2023) Disentangling the responses of dissolved organic carbon and nitrogen concentrations to

overlapping drivers in a northeastern United States forested watershed. *Frontiers in Water*.  
<https://doi.org/10.3389/frwa.2023.1065300>

Grande E\*, **Seybold EC**, Tatariw C, Visser A, Braswell A, Arora B, Birgand F, Haskins J, Zimmer M. (2023). Seasonal and Tidal Variations in Hydrologic Inputs Drive Salt Marsh Porewater Nitrate Dynamics. *Hydrological Processes*. <https://doi.org/10.1002/hyp.14951>

Grande E\*, Visser A, Oertre E, Arora B, **Seybold EC**, Tatariw C, Braswell AE, Montalvo, M, Zimmer MA. (2023). Flow directions and ages of subsurface water in a salt marsh system constrained by isotope tracing. *Estuaries and Coasts*. <https://link.springer.com/article/10.1007/s12237-023-01237-3>

Perdrial JN, Kincaid DW, Wheaton D, **Seybold EC**, Stewart\* B, Walls L, Blouin M, Toolin R, Chorover J, Lewis C. (2023). Equity, Diversity, and Community as the Basis for Critical Zone Science and Education. *Earth's Futures*. <https://doi.org/10.1029/2022EF002812>

**Seybold EC**, Dwivedi R, Musselman K, Kincaid DW, Schroth AW, Adair CA, Claussen A, Perdrial JN. (2022). Winter runoff events pose an unquantified continental-scale risk of high wintertime nutrient export. *Environmental Research Letters*. <https://doi.org/10.1088/1748-9326/ac8be5>

Zipper SC, Popescu I\*, Compare K\*, Zhang C, **Seybold EC**. (2022). Alternative states and hydrological regime shifts in a large intermittent river. *Environmental Research Letters*.  
<https://doi.org/10.1088/1748-9326/ac7539>

Grande E\*, Arora B, Visser A, Montalvo M\*, Braswell AE, **Seybold EC**, Tatariw C, Beheshti K, Zimmer MA. (2022). Tidal frequencies and quasiperiodic subsurface water level variations dominate redox dynamics in a salt marsh system. *Hydrological Processes*. <https://doi.org/10.1002/hyp.14587>

**Seybold EC**, Fork ML, Braswell AE, Blaszcak J, Fuller MR, Kaiser KE, Mallard JM, Zimmer MA. (2021) A Classification Framework for Assessing Ecological, Biogeochemical, and Hydrological Synchrony and Asynchrony. *Ecosystems*. <https://doi.org/10.1007/s10021-021-00700-1>

Siegert CM, Suriano ZJ, Leathers DJ, Gold AJ, Addy K, Schroth AW, **Seybold EC**, Inamdar S, Levia DF. (2021) Effects of Atmospheric Circulation on Stream Chemistry in Forested Watersheds across the Northeastern United States: Part 1. Synoptic-scale Forcing. *JGR-Atmospheres*.  
<https://doi.org/10.1029/2020JD033413>

Suriano ZJ, Siegert CM, Leathers DJ, Gold AJ, Addy K, Schroth AW, **Seybold EC**, Inamdar S, Levia DF. (2021) Effects of Atmospheric Circulation on Stream Chemistry in Forested Watersheds across the Northeastern United States: Part 2. Interannual Weather Type Variability. *JGR-Atmospheres*.  
<https://doi.org/10.1029/2021JD034546>

Kincaid DW, **Seybold EC**, Adair EC, Bowden WB, Perdrial JN, Vaughan MCH, Schroth AW. (2020) Land use and season influence event-scale riverine export dynamics of nitrate and soluble reactive phosphorus from headwater catchments. *Water Resources Research*.  
<https://doi.org/10.1029/2020WR027361> \*Awarded WRR Editor's Choice Award\*

Landsman-Gerjoi M\*, Perdrial JN, Lancellotti B\*, **Seybold EC**, Schroth AW, Adair CA, Wymore A. (2020) Measuring the influence of environmental conditions on dissolved organic matter

biodegradability and optical properties: a combined field and laboratory study. *Biogeochemistry*.  
<https://doi.org/10.1007/s10533-020-00664-9>

**Seybold EC**, Gold A, Inamdar S, Bowden WB, Vaughan M, Pradhanang S, Addy K, Shanley J, Vermilyea A, Levia D, Adair C, Wemple B, Schroth A. (2019) Influence of land use and hydrologic variability on seasonal dissolved organic carbon and nitrate export: insights from a multi-year regional analysis for the northeastern USA. *Biogeochemistry*. <https://doi.org/10.1007/s10533-019-00609-x>

**Seybold EC**, McGlynn BL. (2018) Hydrologic and biogeochemical drivers of dissolved organic carbon and nitrate uptake in headwater stream networks. *Biogeochemistry*.  
<https://doi.org/10.1007/s10533-018-0426-1>

Bernhardt ES, Blaszczak J, Ficken C, Fork M, Kaiser K, **Seybold EC**. (2017) Control Points in Ecosystems: Moving beyond the hot spot hot moment concept. *Ecosystems*.  
<https://doi.org/10.1007/s10021-016-0103-y>

Schade JD, **Seybold EC**, Drake T, Spawn S, Sobczak W, Frey KE, Holmes RM, Zimov N. (2016) Variation in summer nitrogen and phosphorous uptake among Siberian headwater streams. *Polar Research* 35. <https://doi.org/10.3402/polar.v35.24571>

### **Book Chapters and Open File Reports** (\*denotes student author)

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Gambill I\*, Zipper SC, Kirk M, Seybold EC. (2024) Exploring drivers of groundwater recharge at Konza Prairie (Flint Hills region, Kansas, USA) using transfer function noise models. Kansas Geological Survey Open-File Report 2024-6.  
<https://www.kgs.ku.edu/Publications/OFR/2024/OFR2024-6.pdf>

Popescu I\*, Zipper SC, Seybold EC. (2022) Identifying Regime Shifts in the Arkansas River near Larned, KS. Kansas Geological Survey Open-File Report 2022-4.  
<https://www.kgs.ku.edu/Publications/OFR/2022/OFR2022-4/OFR2022-4.pdf>

Compare K\*, Zipper SC, Zhang C, **Seybold EC**. (2021) Characterizing streamflow intermittency and subsurface heterogeneity in the middle Arkansas river basin. Kansas Geological Survey Open-File Report 202. <https://www.kgs.ku.edu/Publications/OFR/2021/OFR2021-1.pdf>

**Seybold EC**, McGlynn BL, Yashan D (2021) Middle Rockies: Tenderfoot Creek Experimental Forest, Montana. In: Biological Responses to Stream Nutrients: A Synthesis of Science from Experimental Forests and Ranges. *General Technical Report 981*. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. [https://www.fs.fed.us/pnw/pubs/pnw\\_gtr981.pdf](https://www.fs.fed.us/pnw/pubs/pnw_gtr981.pdf)

### **Invited seminars**

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**Seybold EC**. October 2023. (invited seminar) Freshwater futures: exploring the impacts of changing flow regimes on water quality. Department of Geology, University of Kansas, *Lawrence, KS*.

**Seybold EC**. October 2023. (invited seminar) Terrestrial-aquatic transitions in non-perennial streams: the impact of stream wetting and drying on water sources, solute dynamics, and ecosystem function. Department of Natural Resources and the Environment, University of New Hampshire, *Durham, NH*.

**Seybold EC.** July 2023. (invited seminar) Climate change, water quality, and the future of our rivers. Penn State Women Advancing River Research seminar series, *online*.  
<https://www.cee.psu.edu/events/women-advancing-river-research.aspx>

**Seybold EC, Zipper SC.** April 2023. (invited seminar) Exploring linkages between hydrology and biogeochemistry across perennial to non-perennial flow regimes in the Great Plains – and beyond. USGS Kansas Water Science Center seminar series, *Lawrence, KS*.

**Seybold EC.** March 2023. (invited seminar) Are changing winters the canary in the coal mine? Exploring the vulnerability of winter water quality. Department of Geosciences, Boise State University, *Boise, ID*.

**Seybold EC.** March 2023. (invited seminar) Groundwater quality in the Upper Arkansas River Corridor: results from the KGS mineralization study. Sustaining Water in the Ark River Basin Symposium, Kansas Association for Wetlands and Streams, *Dodge City, KS*.

**Seybold EC.** January 2023. (invited seminar) Groundwater nitrate dynamics at the Flickner Innovation Farm. KCARE Symposium on Flickner Innovation Farm Research, *Inman, KS*.

**Seybold EC.** April 2022. (invited seminar) How low can you go? Understanding the hydrologic and ecological function of non-perennial stream ecosystems. Department of Geology Colloquium, University of Vermont, *Burlington, VT*.

**Seybold EC.** September 2020. (invited seminar) Exploring the effects of environmental change on the hydrogeochemistry of groundwater and surface water using high frequency sensor networks. Department of Geology Seminar Series, Wichita State University, *Wichita, KS*.

**Seybold EC.** March 2020. (invited seminar) Biogeochemical effects of changing winter climate on aquatic nutrient dynamics from watershed to continental scales. Division of Biology Seminar Series, Kansas State University, *Manhattan, KS*.

**Seybold EC.** February 2020. (invited seminar) Effects of rain on snow events and changing winter climate on aquatic nutrient dynamics. Department of Geology Seminar Series, University of Kansas, *Lawrence, KS*.

**Seybold EC.** November 2019. (invited seminar) Taking the pulse of water quality: Understanding the effects of environmental change on the hydrogeochemistry of groundwater and surface water. Kansas Biological Survey Seminar Series, University of Kansas, *Lawrence, KS*.

**Select conference presentations/published abstracts (in last 3 years; \*denotes student first author)**

**Seybold EC, Burgin AM, Ramos R, Swenson L, Zipper SC, Wilhelm J, Flynn S, Atkinson C, Wolford M, Zarek K, Jones CN.** 2024. (oral presentation) Network fragmentation drives changes in dissolved streamwater chemistry in a non-perennial stream network. *WaterSciCon24*, St. Paul, MN.

Brown C\*, Plont S, Burgin J, **Seybold EC.** 2024. (poster presentation) The Oxygen Regimes of Non-perennial Streams. *WaterSciCon24*, St. Paul, MN.

Burgin AM, Aho K, Allen D, Atkinson C, Benstead J, Godsey S, Hale RL, Jackson C, Jones CN, Kuehn K, Lemke D, Lohse KA, **Seybold EC**, Shogren A, Speir S, You Y, Zeglin L, Zipper SC, Busch MA, Cook SC, Kraft M, Ibal J, Plont S, Ramos RJ, Belskis A, Bilbrey E, Brown C, Babbit A, Crowther E, Bond CT, Czech H, Hanschu J, Flynn S, Kemajou Tchamba AL, Knight P, Lanfear R, Nave B, Leavell J, Newcomb S, Peterson D, Sclafani M, Richards BL, Smith C, Sniadach A, Sommerville A, Thomas SG, Utzman C, Wakefield R, Wheeler C, Wilhelm J, Wolford M, Zarek K. 2024. (oral presentation) Fostering big data integration using team science: The Aquatic Intermittency effects of Microbiomes in Streams (AIMS) Project. *WaterSciCon24*, St. Paul, MN.

Chatterjee S\*, **Seybold EC**, Zipper SC. 2024. (poster presentation) Exploring Temporal Dynamics of Nitrate Export in the Eastern Kansas River Basin. *WaterSciCon24*, St. Paul, MN.

Christensen J, Hammond JC, Jones CN, Lane CR, Price AN, Segura C, **Seybold EC**, Zimmer MA, Cheng FY, Golden HE, Husic D, Jaeger KL, Kelleher CK, Mahoney DT, McMillan HK, Sando RR, Ward AS. 2024. (oral presentation) Geospatial Implications of Considering Various Definitions of Headwater Streams. *WaterSciCon24*, St. Paul, MN.

Hatley CM\*, **Seybold EC**, Zipper SC, Kincaid DW, Underwood KL, Rizzo DM, Perdrial JN, Li L, Burgin AM. 2024. (oral presentation) Event-scale concentration-discharge relationships in a strongly reservoir-impacted regional river basin. *WaterSciCon24*, St. Paul, MN.

Talukdar G, Zipper SC, Custard A, Hatley CM, **Seybold EC**. 2024. (poster presentation) Unraveling changing precipitation patterns over the US Great Plains. *WaterSciCon24*, St. Paul, MN.

Schroth AW, Adair C, Bowden WB, Blocher S, Serchan S, Trusal Kemper J, Underwood KL, Vaughan M, Kincaid DW, **Seybold EC**, Perdrial JN, Vogel S, Duffy M. 2024. (poster presentation) The Northeastern Water Resources Monitoring Network – Vermont Edition. *WaterSciCon24*, St. Paul, MN.

Cable B\*, Blom E, Perdrial N, Treto V, Underwood K, Shanley J, Hicks N, Li L, Kincaid D, Richardson J, **Seybold EC**, Stewart B, Vierbicher A, Perdrial J, Rice A. 2023. (poster presentation) Disturbances, Resilience, and the Role of Calcium-Bearing Minerals Weathering in Northeastern Forests. *AGU Fall Meeting*, San Francisco, CA.

Hicks N\*, Li L, Stewart B, Underwood K, Ul Haq I, Kincaid D, Lowman L, Shanley J, Seybold EC, Cable B, Perdrial J. 2023. (poster presentation) Impact of changes in water availability on water quality: a data-driven investigation of Critical Zone subsurface and vegetation interactions. *AGU Fall Meeting*, San Francisco, CA.

Perdrial J, Abbott B, Kincaid D, Boisrame G, Lowman L, Jin L, **Seybold EC**, Hatley C, Michael H, Andrew E, Boyer E, Dere A, Ma I, Shanley J, Wheaton D, Hicks N, Li L, Cable B, Spicer N, Billings S. 2023. (oral presentation) Exploring patterns and processes of Critical Zone (CZ) multidimensional resilience across the CZ Collaborative Network. *AGU Fall Meeting*, San Francisco, CA.

Stegen J, Datry T, Busch M, Braswell AE, Fisher J, Zheng J, Herndon E, Painter S, Roche K, **Seybold EC**, Sweetman J, Kinsman-Costello L, Abrahamson J, Guimond J, Regier P, Ladau J, Boye K, Forbrich I, Middleton B, Burgin A, Song H, Fluet-Chouinard E, Bam E, Vander Vorste R. 2023. (poster presentation) Variable Inundation Among Earth's Terrestrial Ecosystems. *AGU Fall Meeting*, San Francisco, CA.

Stewart B\*, Shanley J, Matt S, **Seybold EC**, Kincaid D, Vierbicher A, Cable B, Hicks N, Perdrial J, Li L. 2023. (oral presentation) Differential Production and Export of Dissolved Organic Carbon from Shallow and Deep Subsurface. *AGU Fall Meeting*, San Francisco, CA.

Whittemore D, **Seybold EC**, Butler JJ. 2023. (poster presentation) A Closed Basin in the High Plains Aquifer Created by Groundwater Exploitation Leading to Contamination by Saline River Water High in Uranium. *AGU Fall Meeting*, San Francisco, CA.

Brown C\*, Plont S, Burgin A, **Seybold EC**. 2023. (poster presentation) The Oxygen Regimes of Non-Perennial Streams. *Governor's Water Conference*, Manhattan, KS.

Chatterjee S\*, **Seybold EC**. 2023. (poster presentation) Exploring Temporal Trends in Nitrate Export in the Eastern Kansas River Basin. *Governor's Water Conference*, Manhattan, KS.

Hatley C\*, **Seybold EC**, Zipper S. 2023. (poster presentation) Event-Scale Nitrate Transport Dynamics in the Kansas River Basin. *Governor's Water Conference*, Manhattan, KS. \*Runner-up Best Graduate Student Poster\*

Sommerville A\*, Burgin A, Brown C, Busch M, **Seybold EC**. 2023. (poster presentation) Characterizing Dissolved Organic Matter in Non-Perennial Streams. *Governor's Water Conference*, Manhattan, KS.

**Seybold EC**, Burgin AJ, Brown C, Speir SL, Wheeler CT, Zipper SC. 2022. (poster presentation) Linking oxygen regimes to flow regimes in non-perennial streams. *AGU Fall Meeting*, Chicago, IL.

Burgin AJ, Allen DC, Brown C, Cook SC, Flynn S, Nave B, **Seybold EC**, Swenson L, Wheeler C, Wilhelm J, Zeglin L, Zarek K, Zipper SC. 2022. (oral presentation) Building the Aquatic Intermittency effects on Microbiomes in Streams (AIMS) network to enable understanding of how intermittent flow impacts water quality and stream microbiomes. *AGU Fall Meeting*, Chicago, IL.

Grande E\*, **Seybold EC**, Tatariw C, Visser A, Braswell AE, Arora B, Birgand F, Haskins J, Zimmer MA. 2022. (oral presentation) Seasonal and tidal forcing control salt marsh porewater nitrate dynamics in a Mediterranean system. *AGU Fall Meeting*, Chicago, IL.

Grande E\*, Visser, A, Oerter E, Arora B, **Seybold EC**, Tatariw C, Braswell A, Zimmer M. 2022. (oral presentation) Flow directions and velocities of subsurface water in a Mediterranean salt marsh system constrained by isotope tracing. *AGU Fall Meeting*, Chicago, IL.

Kincaid DW, Underwood K, Hamshaw S, Ul Haq I, Li L, Rizzo D, **Seybold EC**, Stewart B, Perdrial JN. 2022. (invited poster presentation) Leveraging Catchment Attributes to Explain Patterns of Concentration-Discharge Relationships Across the Contiguous United States. *AGU Fall Meeting*, Chicago, IL.

Kincaid DW, Perdrial JN, Wheaton D, Seybold EC, Stewart B, Walls L, Blouin M, Toolin RE, Chorover. 2022. (poster presentation) Equity, Diversity, and Community: Opportunities for Critical Zone Science and Education. *AGU Fall Meeting*, Chicago, IL.



Montalvo M\*, Grande E, Braswell AE, Haskins J, Endris C, Gerbl F, Huang MH, Visser A, Arora B, **Seybold EC**, Tatariw C, Grunewald ED, Zimmer MA. 2022. (oral presentation) Seasonal Terrestrial Freshwater Inputs Impact Salt Marsh Hydrology. *AGU Fall Meeting*, Chicago, IL.

Perdrial J, Ruckhaus M, **Seybold EC**, Underwood K, Kincaid DW, Shanley J, Stewart B, Li Li. 2022. (poster presentation) Drivers and pathways of carbon and nitrogen in soil and streams: insights from the Sleepers River Research Watershed in Vermont. *AGU Fall Meeting*, Chicago, IL.

Romero J\*, Tatariw C, Haynes A, Grande E, Montalvo M, Wilshire M, Carlson HK, Braswell A, **Seybold EC**, Visser A, Arora B, Dwivedi D, Zimmer MA. 2022. (poster presentation) Investigating Hydrobiogeochemical Drivers of Salt Marsh Nitrogen Cycling. *AGU Fall Meeting*, Chicago, IL.

Stewart B\*, Shanley J, Matt S, Perdrial JN, Ruckhaus M, **Seybold EC**, Kincaid DW, Li Li. 2022. (oral presentation) Stream DOC and DIC Response to Climate and Acidification Disturbances at Sleepers River. *AGU Fall Meeting*, Chicago, IL.

Zeglin L, Kerner T, Aho K, Brisendine J, Bond C, Burgin AJ, Hansen P, Jackson C, Kuehn K, Lee S, Nave B, Ramos R, Semenova T, **Seybold EC**, Sikes BA, Swenson L, Tchamba ALK, Thomas SG, Wheeler C, Wohler A, You Y, Zipper SC. 2022. (invited poster presentation) Assessing terrestrial-aquatic microbiome connectivity in non-perennial streams. *AGU Fall Meeting*, Chicago, IL.

Zimmer MA, Grande E, Montalvo M, **Seybold EC**, Tatariw C, Visser A, Braswell A, Arora B, Hynes A, Romero J, Birgand F, Haskins J. Identification of Hot Moments of Nutrient Processing in Coastal Systems Using High Frequency Sensors. 2022. (invited oral presentation) *AGU Fall Meeting*, Chicago, IL.

**Seybold EC**, Atkinson CL, Benstead J, Brown CL, Flynn SM, Hale RL, Jones CN, Speir S, Swenson L, Wheeler C, Wilhelm J, Wolford MA, Zipper SC, Burgin A. 2022. (oral presentation) Changes in groundwater contributions influence streamwater chemistry during dry-down of a prairie stream. *Joint Aquatic Science Meeting*, Grand Rapids, MI.

Bond CT\*, Nave BA, Wheeler C, Kerner T, Aho K, Burgin A, Jackson C, **Seybold EC**, You Y, Zeglin L, Zipper SC, Kuehn K. 2022. (poster presentation) Fungal biodiversity across and intermittent stream network at the Konza Prairie, Kansas, USA. *Joint Aquatic Science Meeting*, Grand Rapids, MI.

Brown CL\*, Wheeler C, Speir SL, Allen DC, Benstead JP, Burgin AJ, Hale RL, **Seybold EC**. 2022. (poster presentation) Duration of drying controls the magnitude and recovery of metabolism in U.S. intermittent streams. *Joint Aquatic Science Meeting*, Grand Rapids, MI.

Burgin A and the AIMS collaborators. 2022. (oral presentation) Building the AIMS Network: Exploring the Aquatic Intermittency effects of Microbiomes in Streams. *Joint Aquatic Science Meeting*, Grand Rapids, MI.

Flynn SM\*, Burgin A, **Seybold EC**, Thomas G, Shogren AJ. 2022. (poster presentation) Flip of the switch: How do streams turn on and how does this phenomena impact water quality? *Joint Aquatic Science Meeting*, Grand Rapids, MI.

Kerner T, Nave BA, Wheeler C, Bond CT, Burgin A, **Seybold EC**, Kuehn KA, Zeglin LH, Zipper SC, Cook SC, Aho K, You Y. 2022. (poster presentation) Bacterial and Archaeal Communities Across an Intermittent Stream Network in the Konza Prairie. *Joint Aquatic Science Meeting*, Grand Rapids, MI.

Kincaid D, Underwood K, Hamshaw S, **Seybold EC**, Rizzo D, Li L, Perdrial J. 2022. (oral presentation) Do Catchment Attributes Explain Stream Solute Concentration-Discharge Patterns Across the Contiguous US? *Joint Aquatic Science Meeting*, Grand Rapids, MI.

Nave BA\*, Bond CT, Cook SC, Seybold EC, Zipper SC, You Y, Kuehn KA, Burgin A, Zeglin LH. 2022. (poster presentation) Bacterial and Fungal Abundance Responses to Hydrological Dynamics in an Intermittent Stream. *Joint Aquatic Science Meeting*, Grand Rapids, MI.

Speir S, Atkinson CL, Wolford MA, Allen D, Benstead J, Hale RL, Jones CN, Peterson D, **Seybold EC**, Shogren AJ, Thomas SG, Burgin A. 2022. (oral presentation) Flow and Behold: Non-perennial flow regimes impact sediment export across the continental USA. *Joint Aquatic Science Meeting*, Grand Rapids, MI.

Wilhelm JF\*, Burgin A, **Seybold EC**, Wheeler C, Zipper SC, Zarek K. 2022. (oral presentation) How does dry-down on an intermittent prairie stream network affect greenhouse gas concentrations? *Joint Aquatic Science Meeting*, Grand Rapids, MI.

Zarek K\*, Wheeler C, Wilhelm JF, **Seybold EC**, Zipper SC, Burgin A. 2022. (poster presentation) Watershed Network Dry Down Effects on Dissolved Gas Concentrations (N<sub>2</sub>, Ar, O<sub>2</sub>) in a Prairie Stream. *Joint Aquatic Science Meeting*, Grand Rapids, MI.

Swenson L\*, Burgin AJ, Hatley C, Jones CN, Kirk M, Peterson D, Seybold EC. 2022. (poster presentation) Changes in Baseflow Sources During the Dry-Down of a Non-Perennial Headwater Stream. *AGU Frontiers in Hydrology Meeting*, San Juan, PR.

Zipper SC, Popescu I, Compare K, Seybold EC, Zhang C. 2022. (oral presentation) Alternative stable states and stabilizing feedbacks in a large non-perennial river. *AGU Frontiers in Hydrology Meeting*, San Juan, PR.

**Seybold EC**, Wolford M, Brown CL, Burgin A, Flynn S, Godsey S, Hale R, Jones CN, Peterson D, Smith C, Speir S, Wheeler C, Wilhelm J, Zipper S. 2021. (invited oral presentation) The effects of flow intermittency and groundwater-surface water exchange on stream biogeochemistry in a non-perennial prairie stream. *AGU Fall Meeting*, New Orleans, LA.

\*Grande E, Arora B, Visser A, Montalvo M, Braswell AE, **Seybold EC**, Tatariw C, Beheshti K, Zimmer MA. 2021. (oral presentation) Tidal forcing influences on biochemical processes in a salt marsh. *AGU Fall Meeting*, New Orleans, LA.

\*Montalvo M, Grande E, Zimmer MA, Braswell AE, Haskins JC, Endris C, Gerbl F, Tatariw C, Arora B, Visser A, **Seybold EC**, Caldwell W, Grunewald ED. 2021. (poster presentation) Seasonal Changes in Subsurface Hydrology Influence Nutrient Cycling in a Salt Marsh. *AGU Fall Meeting*, New Orleans, LA.

Perdrial JN, Kincaid DW, Wheaton D, Walls L, Ul Haq I, Rizzo D, Hamshaw SD, Lee BS, **Seybold EC**, Lewis G, Toolin RE, Chorover J. 2021. (oral presentation) Why Critical Zone (CZ) science needs team science: insights from the big data CZ network cluster. *AGU Fall Meeting*, New Orleans, LA.

Perdrial JN, Kincaid D, Wheaton D, Walls L, Ul Haq I, Rizzo D, Hamshaw D, Lee B, **Seybold EC**, Lewis G, Toolin R, Chorover J. 2021. (poster presentation) Why Critical Zone (CZ) science needs team science: insights from the Big Data CZ Network cluster. *AGU Fall Meeting*, New Orleans, LA.

\*Ruckhaus M, **Seybold EC**, Petrino M, Shanley J, Stewart B, Li L, Underwood K, Lini A, Perdrial JN. 2021. (poster presentation) Carbon and Nitrogen Dynamics in Sleepers River Research Watershed: A Combined Lab and Field Study. *AGU Fall Meeting*, New Orleans, LA.

Shanley J, Sebestyen S, Chalmers A, Matt S, Chandler D, Bailey S, Campbell J, Ryan K, Perdrial J, Ruckhaus M, **Seybold EC**, Li L, Stewart B, Liu F, Porter V. 2021. (oral presentation) Long-term research and monitoring at Sleepers River Research Watershed, Vermont USA. *AGU Fall Meeting*, New Orleans, LA.

Stewart B\*, Shanley B, Matt S, Perdrial J, Ruckhaus M, **Seybold EC**, Li L. 2021. (oral presentation) Stream chemistry response to external perturbations at Sleeper's River. *AGU Fall Meeting*, New Orleans, LA.

Tatariw C, **Seybold EC**, Montalvo M, Zimmer MA, Kleinhuizen A, Visser A, Braswell AE, Grande E, Arora B. 2021. (poster presentation) Seasonal Precipitation is a Hydrologic Driver of Salt Marsh Nitrogen Removal. *AGU Fall Meeting*, New Orleans, LA.

Zipper SC, Compare K, Popescu I, **Seybold EC**, Zhang C. 2021. (poster presentation) Flow regimes and alternate stable states in a non-perennial river. *AGU Fall Meeting*, New Orleans, LA.

**Seybold EC** et al. 2021. (oral presentation) Effects of rain on snow events on runoff generation and nutrient export from forested and agricultural catchments in northern Vermont. *Society of Freshwater Sciences Annual Meeting*, virtual conference.

Kincaid D, Hamshaw S, Underwood K, **Seybold EC**, Adair C, Perdrial J, Rizzo D, Wemple B, Schroth A. 2021. (oral presentation) Self-organizing maps reveal the influence of event regimes on dissolved N and P export dynamics from an agricultural and forested watershed. *Society of Freshwater Sciences Annual Meeting*, virtual conference.

\*Grande E, Zimmer MA, **Seybold EC**, Braswell AE, Tatariw C, Greene A, Montalvo M, Birgand F, Visser A. 2020. (poster presentation) Using high spatiotemporal nitrate measurements to assess nutrient transport and transformations at the terrestrial-marine interface of a tidal watershed. *AGU Fall Meeting*, virtual location.

**Seybold EC** et al. 2019. (poster presentation) Using high-frequency sensor networks to quantify terrestrial nitrogen sources to a coastal estuary. *Coastal and Estuarine Research Federation Biannual Meeting*, Mobile, AL.

### **Student Training & Mentoring Experience**

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- Co-director of KGS [Geohydrology Internship Program](#)

- Co-PI of Building Emerging STEM Scholars of Tomorrow ([BESST](#)) Program at KU
- Trained Facilitator for [Entering Research](#) Curriculum from Center for Improvement of Mentored Experiences in Research
- Graduate Adviser:
  - Connor Brown (Ph.D. candidate, University of Kansas; primary adviser)
  - Shreya Chatterjee (Ph.D. aspirant, University of Kansas; primary adviser)
  - Camden Hatley (Ph.D. aspirant, University of Kansas; primary adviser)
  - Alexi Sommerville (M.S. student, University of Kansas; primary adviser)
- Committee Member (current):
  - Jessica Wilhelm (Ph.D. student, University of Kansas; committee member)
  - Sarah Flynn (Ph.D. student, University of Kansas; committee member)
  - Bryan Rodriguez-Colon (Ph.D. student, University of Kansas; committee member)
  - Shaurya Swami (Ph.D. student, University of Vermont; committee member)
  - Jasmine Morejon (M.S. student, University of Alabama; committee member)
- Committee Member (completed):
  - Andria Greene (M.S. student, University of California Santa Cruz; committee member); Manya Ruckhaus (M.S. student, University of Vermont; committee member); Kari Snelling (M.S. student, University of Kansas; committee member)
- Undergraduate research mentor (completed):
  - Thomas Adler (B.S., Univ. of Vermont); Brooklyn Armijo (M.S., Kansas State Univ.); Patrick Clay (B.S., Univ. of North Carolina – Chapel Hill); Kelsey Coates (B.S., Duquesne Univ.); Mariah Cronin (B.S., Univ. of Vermont); Alaura Custard (B.S., Univ. of Kansas); Ricardo Feliciano-Rivera (B.S., Univ. of Puerto Rico – Mayagüez); Amanda Jackson-Mojica (B.S., Univ. of Puerto Rico – Mayagüez); Kunal Palawat (B.S., Univ. of Vermont); Emily Persiak (B.S., Univ. of Vermont); Julia Petty (B.S., Univ. of Vermont); Ellie Sovcik (B.S., Univ. of Vermont; Honors thesis advisee); Michelle Wolford (B.S., Colorado College); Valerie Xayaphat (B.S. student, Univ. of Kansas; Emerging Scholars program); Colleen Yancy (B.S., Univ. of Vermont)

### **Teaching Experience** (U=Undergraduate; G=Graduate)

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- Univ. of Kansas: The Way the Earth Works (U; Fall 2024); Critical Zone Science (U/G; Spring 2025)
- Duke Univ. (Teaching Assistant): Dynamic Earth (Intro. Earth Science); Earth Surface Processes; Landscape Hydrology; Water Resources Management

### **Synthesis Working Group Participation**

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Co-PI, <a href="#">Powell Center</a> working group “Critical zone as a mediator of hydroclimate-ecosystem asynchrony”	2024-present
Member, NSF working group “ <a href="#">Revising the Freshwater Imperative</a> ”	2023-present
Member, USGS Powell Center-EPA working group on Headwater Stream Modeling	2023-present
Member, NSF Dry Rivers Research Coordination Network	2022-present

### **Stakeholder Engagement**

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#### *Presentations:*

**Seybold EC.** October 2024. (invited presentation) Kan-AWQuA: Developing an Aquifer Water Quality Assessment Program for the state of Kansas. Kansas Department of Health and the Environment Well Technology Conference, *Wichita, KS.*

**Seybold EC.** June 2024. (invited presentation) The future of groundwater quality in Kansas: building a next-generation monitoring and research program. KGS Legislative Field Conference, *Manhattan, KS*.

**Seybold EC.** December 2023. (invited presentation) Groundwater quality in Kansas: Challenges, Opportunities, and Monitoring Needs. Kansas Farm Bureau Conference, *Manhattan, KS*.

**Seybold EC.** June 2023. (invited presentation) Groundwater quality in Kansas: Challenges, Opportunities, and Monitoring Needs. Kansas Water Authority Meeting, *Dodge City, KS*.

**Seybold EC.** March 2023. (invited presentation) Groundwater quality in the Upper Arkansas River Corridor: results from the KGS mineralization study. Sustaining Water in the Ark River Basin Symposium, Kansas Association for Wetlands and Streams, *Dodge City, KS*.

**Seybold EC.** January 2023. (invited presentation) Groundwater nitrate dynamics at the Flickner Innovation Farm. KCARE Symposium on Flickner Innovation Farm Research, *Inman, KS*.

### **Leadership, outreach, and service to scientific community and society (ongoing)**

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- Scientific Director, Kansas [Groundwater Quality Research and Monitoring Program](#)
- Co-Chair, [Non-perennial Ecosystems Chapter](#) of the Society for Freshwater Science
- Member, AGU Water Quality Technical Committee
- Topic Editor, [Women in Science special issue](#) for *Frontiers in Water*
- Reviewer for 10+ peer-reviewed journals
- Panelist for NSF DEB Ecosystem Sciences Cluster, NSF Hydrologic Sciences Program
- Ad-hoc Reviewer for NSF proposals (DEB Ecosystem Sciences Cluster, Hydrologic Sciences, GLD)
- Session convener at national meetings: *Frontiers in Water-Quality Science: Origins, Patterns, and High-Frequency Detection of Spatial and Temporal Variation* (AGU 2021); *Global Impact of Non-perennial Waterways: Integrating Hydrological, Geochemical, Microbiological, and Social Perspectives* (AGU 2022); *Frontiers in Water-Quality Science: Origins, Patterns, and Detection of Spatial and Temporal Dynamics* (AGU 2022); *Frontiers in Water Quality* (AGU 2023); *Frontiers in Water Quality Research and Applications* (WaterSciCon24)
- Classroom outreach: lectures on Water Resources & Climate Change (Bishop Seabury High School)