KENDRA E. KAISER, Ph.D.

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EDUCATION

2017 **Duke University, Ph.D.**
Nicholas School of the Environment
Earth and Ocean Sciences

2011 **Montana State University**
B.S. Soil and Water Science (*Honors*)
B.S. Environmental Biology (*Honors*)

RESEARCH POSITIONS

2019- Department of Geosciences, Boise State University
Assistant Research Faculty

2017-2019 Department of Geosciences, Boise State University &
Human-Environmental Systems Research Center
Postdoctoral Researcher

2012-2017 Watershed and Biogeochemistry Lab, Duke University
NSF Graduate Research Fellow

2016 USGS Idaho Water Science Center, Boise
NSF Graduate Research Intern

SPONSERED PROJECTS

Current

2022 Assessment of the variability in modeled representation of low and no flow conditions and implications for management decision support tools ($223,198), National Climate Adaptation Science Center, PI

2022 Integrated predictive water quantity and quality models to support healthy agroecosystems and water resource management ($298,629), Agriculture and Food Research Initiative, USDA, PI

2021 Method development for analyzing and predicting the impact of land use conversion on river diversions. Science & Technology Grant, Bureau of Reclamation ($161,00), co-PI

2021 Lucky Peak Power Forecast Modernization Feasibility Study, Boise-Kuna Irrigation District & Lucky Peak Power Plant ($21,000), PI

2021 Evaluation of the spatial variability of *E. coli* in irrigation canals for the FDA Produce Safety Rule, Specialty Crop Block grant, Idaho State Department of Agriculture, ($107,376), PI

2020 Integration of flow permanence and stream temperature models and data rescue Northwest Climate Adaptation Center, Department of Interior ($360,00), Co-PI

2019 Web-enabled Site Suitability and Visualization for Idaho's Specialty Crop Industry

Specialty Crop Block Grant, Idaho State Department of Agriculture ($106,675), Co-PI

Collaborative

2018- Dry Rivers Research Coordination Network, National Science Foundation

2016- Probability of Streamflow Permanence Project, Northwest Climate Adaptation Center, USGS, Department of Interior

PUBLICATIONS (*student author)

Zimmer, M.A., A.J. Burgin, **K.E. Kaiser,** J. Hosen. (2022). The unknown biogeochemical impacts of drying rivers and streams. *Nature Communications* 13:7213 https://doi.org/10.1038/s41467-022-34903-4

Kaiser, K.E., A. Braswell, M. Fork. (2022). NSF supported socio-environmental research: How do crosscutting programs affect research funding, publication, and citation patterns? *Ecology & Society,* 27:3 https://doi.org/10.5751/ES-13281-270325

Rudisill, W.*, **K.E. Kaiser**, A.N. Flores. (2022) Evaluating Long Term One-Wat Atmosphere- Hydrology Simulations and the Impacts of Two-Way Coupling in Four Mountain Watersheds *Hydrological Processes* doi.org/10.1002/hyp.14578

DelVecchia A.G., M. Shanafield, M.A. Zimmer, M.H. Busch*, C.A. Krabbenhoft, R. Stubbington, **K.E. Kaiser**, R.M. Burrows, J. Hosen, T. Datry, S.K. Kampf, S.C. Zipper, K.Fritz, K. Costigan, and D.C. (2022). Reconceptualizing the hyporheic zone for non-perennial rivers and streams. *Freshwater Science* doi.org/10.1086/720071

Seybold, E.C., M. Fork, A.B. Braswell, J.R. Blaszczak, M. Fuller, **K.E. Kaiser**, J.M. Mallard, M. Zimmer (2021) A Classification Framework to Assess Ecological, Biogeochemical, and Hydrologic Synchrony and Asynchrony, *Ecosystems* doi.org/10.1007/s10021-021-00700-1

Zipper S.C, J.C. Hammond, M. Shanafield, M. Zimmer, T. Datry, C.N. Jones, **K.E. Kaiser**, S.E. Godsey, R.M. Burrows, J.R. Blaszczak, M.H. Busch*, A.N. Price*, K.S. Boersma, A.S. Ward, K. Costigan, G.H. Allen, C.A. Krabbenhoft, W.K. Dodds, M.C. Mims, J.D. Olden, S.K. Kampf, A.J. Burgin, and D.C. Allen (2021) Pervasive changes in stream intermittency across the United States. *Environ. Res. Lett*. 16 084033

Hammond, M. Shanafield, M. Zimmer, **K.E. Kaiser**, S.E. Godsey, M.C. Mims, S.C. Zipper, R.M. Burrows, S.K. Kampf, W. Dodds, C.N. Jones, C.A. Krabbenhoft, K.S. Boersma, T. Datry, J.D. Olden, G.H. Allen, A.N. Price*, K. Costigan, R. Hale, A.S. Ward, and D.C. Allen (2021) Spatial patterns and drivers of nonperennial flow regimes in the contiguous United States. *Geophysical Research Letters*. 48:2 doi: 10.1029/2020GL090794

Jaeger, K.L., Hafen, K.C.*, Dunham, J.B., Fritz, K.M., Kampf, S.K., Barnhart, T.B.; **Kaiser, K.E.**, Sando, R., Johnson, S.L., McShane, R.R., Dunn, S.B. (2021) Beyond Streamflow: Call for a National Data Repository of Streamflow Presence for Streams and Rivers in the United States. *Water*, *13*, 1627. https://doi.org/10.3390/w13121627

Kaiser, K.E., A.N. Flores, C.R. Vernon (2020). Janus: A Python Package for Agent-Based Modeling of Land Use and Land Cover Change. Journal of Open research Software, 8: 15. doi: 10.5334/jors.306

Kaiser, K.E., Hillis, A.V., Flores, A.N., (2020) Identifying Emergent Agent Types and Effective Practices for Portability, Scalability, and Intercomparison in Water Resource Agent-Based Models, Environmental Modelling & Software. 127 doi: 10.1016/j.envsoft.2020.104671

Zimmer, M., **K.E. Kaiser**, J.R. Blaszczak, S. Zipper, J. Hammond, K. Fritz, K. Costigan, J. Hosen, S. Godsey, G. Allen, S. Kampf, R. Burrows, C. Krabbenhoft, W. Dodds, R. Hale, J. Olden, M. Shanafield, A. DelVecchia, A. Ward, M. Mims, T. Datry, M. Bogan, K. Boersma, M. Busch*, C. Jones, A. Burgin, and D. Allen. (2020) Zero or not? Causes and consequences of zero-flow stream gage readings. WIRES Water doi: 10.1002/wat2.1436

Jaeger, K.L., R. Sando, R.R. McShane, J.B. Dunham, D.P. Hockman-Wert, **K.E. Kaiser**, K. Hafen*, J.C. Risley, K.W. Blasch. (2019). Probability of Streamflow Permanence Model (PROSPER): A spatially continuous model of annual streamflow permanence throughout the Pacific Northwest. *Journal of Hydrology X*. doi: 10.1016/j.hydroa.2018.100005

Kaiser, K.E., McGlynn B.L. (2018). Nested scales of spatial and temporal variability of soil water content across a semi-arid montane catchment. *Water Resources Research*. doi: 10.1029/2018WR022591

Kaiser, K.E., McGlynn B.L., Dore, J.E. (2018). Landscape analysis of methane flux across complex terrain. *Biogeosciences*. 15:3143-3167. doi: https://doi.org/10.5194/bg-15-3143-2018

Bernhardt, E.S., Blaszczak, J., Ficken, C., Fork, M., **Kaiser, K.E.**, Seybold, E.C. (2017). Ecosystem Control Points – Moving beyond the hot spot hot moment concept. *Ecosystems*. 20:665-682. doi:10.1007/s10021-016-0103-y

Kaiser, K.E., McGlynn B.L., Emanuel, R.E. (2013) Ecohydrology of an outbreak: Mountain pine beetles impact trees in drier landscape positions first. *Ecohydrology.* 6: 444–454. doi: 10.1002/eco.1286

PUBLICATIONS (in progress)

Kaiser, K.E., K. Blasch, M. Hall (*in review*). A survey of non-USGS continuous streamflow gaging networks in the Pacific Northwest. *Journal of American Water Resources Association*

Kaiser, K.E., K. Blasch, S. Schmitz* (*in review*). Integration of distributed streamflow measurement metadata for improved water resource decision-making. *Water*

Murenbeld K., **K.E. Kaiser**, A.N. Flores, T. Caughlin, and T. Jain (*in review*) Delays in U.S. Forest Service Project Implementation in the Western United States: A Survival Analysis of Delay Duration. *Journal of Forestry*

Kaiser, K.E. and R. VanKirk (*in prep*), A reproducible statistical modeling suite for irrigation season streamflow forecasting for Water Management, *Journal of American Water Resources Association*

ADDITIONAL PRODUCTS

Mauger, G.S., Rozance, M.A., Agne, M., Pazdral, R., Robinson, J., Swensen, K., **Kaiser, K.E.**, Pitt, P., Glenn, B. (2021). A Deep Dive into Shallow Waters: Understanding and Responding to Climate-Induced Impacts on Stream Permanence in the Northwestern US. Northwest Climate Adaptation Science Center, University of Washington, Seattle.

Kaiser, K.E. (2022). Wood River Water Collaborative Predictive Streamflow Modeling Suite v2.0.0. https://github.com/kendrakaiser/WRWC

Kaiser, K.E. (2021). Wood River Water Collaborative Predictive Streamflow and Curtailment Date Model Details. Unpublished report.

K.E. Kaiser, J. Freemuth, (2018). Idaho's Water: Supply and Quality in a Time of Growth. Andrus Center for Public Policy Publications and Presentations. https://scholarworks.boisestate.edu/andrus_center_pubs/1/

Kaiser, K.E., D. Hockman-Wert (2018). Idaho, Oregon, and Washington Stream Permanence Reporters [ArcGIS Web Applications]. usgs.maps.arcgis.com/apps/webappviewer/index.html?id=78f21d6e74f648b186b40c41d83aef32

Kaiser, K.E., J. Freemuth, (2018) Idaho's Water: Supply and Quality in a Time of Growth. Conference Proceedings. Andrus Center for Public Policy, Boise, Idaho. https://d25vtythmttl3o.cloudfront.net/uploads/sites/135/2019/04/white-paper-6-Final.pdf

SELECT ORAL PRESENTATIONS

Kaiser, K.E., Stakeholder Engaged Development of an Open-Source Streamflow Forecasting Tool in the Big Wood River Basin, University of Idaho, Soil and Water Science Seminar 03/22

Kaiser, K.E., Perspectives on How to Develop & Engage in Use-Inspired Hydrologic Research, Department of Geosciences Seminar 08/2021

Kaiser, K.E., Academic Innovation Through a Use-Inspired & Data-Driven Hydrologic Research Portfolio, Farmers Conservation Alliance, 08/2021 Lunch & Learn Seminar

Kaiser, K.E., Advances in Modeling Idaho's Intensively Managed Water Systems Idaho Water Quality Conference, 2020

Kaiser, K.E., Flores, A., Hillis, V., Linking global and local socio-economic drivers of LULCC in an Agent Based Model. 2019 AGU Fall Meeting

Kaiser, K.E., McGlynn, Spatial and temporal variability of soil moisture and CO_2 fluxes across complex terrain. 2016 AGU Fall Meeting.

Kaiser, K.E., From process complexity to communication effectiveness: A challenge to those within and outside of the environmental sciences. Young Hydrologists Future of Hydrology pop-ups. 2014 American Geophysical Union Fall Meeting.

Kaiser, K.E., McGlynn, B.L., Dore, J.E. Landscape analysis of methane efflux across complex terrain. 2014 AGU Fall Meeting.

Kaiser, K.E., McGlynn, B.L., Dore, J.E. Lorenzo, T.M., Liang, L, Riveros-Iregui, D.A., Emanuel, R.E., Seybold, E.C. Watershed scale soil biogeochemistry and greenhouse gas fluxes: Space-time dynamics of CO_2, CH_4, and N_2O. 2013 AGU Fall Meeting.

Kaiser, K.E., McGlynn, B.L, Emanuel, R.E., Nippgen, F., Mallard J.M. Ecohydrology: Disturbance and the intersection of vegetation pattern and landscape structure. Montana Section of the American Water Resources Association. October 2011.

SELECT CONFERENCE POSTER PRESENTATIONS

Kaiser, K.E., Flores, A., Incorporation of water resource management into hydrologic models, 2019, Northwest Climate Conference

Kaiser, K.E., Flores, A., Deconvolving Human and Natural Controls on Streamflow. 2019 Society for Freshwater Scientists Annual Meeting

Kaiser, K.E., Flores, A., Hillis, V., Modeling reservoir operators as autonomous agents: balancing flood control with water supply. 2018 CUASHI biennial meeting.

Kaiser, K.E., Flores, A., Hillis, V., Water management typologies for agent based modeling of water resources and its application in the Boise River Basin, USA. 2017 AGU Fall Meeting.

Kaiser, K.E., McGlynn, B.L., Dore, J.E., Landscape analysis of greenhouse gas fluxes across complex terrain. 2015 Gordon Research Conference, Catchment Science: Interaction of Hydrology, Biology & Geochemistry.

Kaiser, K.E., McGlynn, B.L., Emanuel, R.E., Assessing Mountain Pine Beetle infestation patterns in space and time using high resolution QuickBird imagery and LiDAR. 2013 AGU Fall Meeting.

Kaiser, K.E., McGlynn, B.L, Emanuel, R.E., Nippgen, F., Mallard J.M. Ecohydrology of an Outbreak: Impacts of vegetation pattern and landscape structure on mountain pine beetle disturbance. 2011 AGU Fall Meeting.

Kaiser, K.E, Bahn, L. Ecological Informatics: Using Web Technology to Improve Access to Biological Information. 2011 Undergraduate Research Celebration, Montana State University.

TEACHING EXPERIENCE

2023 **Instructor of Record**, Field Methods in Hydrologic Sciences
2021 **Instructor of Record**, Data Management Workshop
2020 **Instructor of Record**, GEOS 497/597 Race and Racism in Earth and Environmental Sciences
2020 Software Carpentry: Introduction to R
2019 Software Carpentry: GitHub
2019 HES 697: Agent-Based Modeling of Human-Environment Systems
Guest Lecture: *ABMs for Modeling Water Resources and Land Use Change*
Geoscience 512: Hydrogeology
Guest Lecture: *Richards Equation*
2018 **Instructor of Record**, Human-Environment Systems: Graduate Seminar
2018 HES 697: Agent-Based Modeling of Human-Environment Systems
Guest Lecture: *ABM of Water Resources in the Boise River Basin*
Geoscience 512: Hydrogeology
Guest Lecture: *Equipotential surfaces and Flownets*

2017 **Bass Instructional Fellow**, History 345: North American Environmental History
Guest lecture: *Designer Ecosystems*: *Reconciling Measurements and Management*
2016 **Teaching Assistant** EOS 323: Watershed Hydrology
Guest lecture: *Introduction to hydrologic data analysis using scientific programming languages* Guest lecture: *Watershed Biogeochemistry*
2015 **Teaching Assistant** EOS 101: Dynamic Earth
2014 **Teaching Assistant** EOS 323: Landscape Hydrology, discussion section lead
2013 **Teaching Assistant** EOS 515: Ecohydrology Field Course
Guest lecture: *Spatiotemporal measurements of soil moisture and greenhouse gas fluxes*

FELLOWSHIPS, AWARDS & HONORS

2019 **Postdoctoral Research Fellowship**, Northwest Climate Adaptation Science Center
2012-2017 **Graduate Research Fellowship,** National Science Foundation
2016 **Graduate Research Internship Program,** National Science Foundation
2016 **Data Expeditions Award,** Duke Information Initiative
2016 **Bass Instructional Fellowship,** Duke Graduate School
2015 **Let's Talk About Water Grant,** CUASHI
2011 **Outstanding student poster award**, EGU

SYNERGISTIC ACTIVITIES

2022- current Faculty Advisor for AWRA at Boise State Student Chapter
2021- current Faculty Advisor for the Geosciences Graduate Organization
2022: Co-organized and co-led the Dry Rivers Research Coordination Network Virtual Annual Meeting
2019 - present AWRA, Idaho Chapter, **Past President**
2021 – present Idaho Department of Water Resources: Big Wood River Groundwater Management Area Technical Working Group
2020 - present **Chair** Diversity, Equity & Inclusivity Efforts, Department of Geosciences
2017- present Treasure Valley Groundwater Model **Technical Advisory Committee**
2017- present **Reviewer for peer-reviewed journals:** Water Resources Research**,** Biogeochemistry**,** JGR- Biogeosciences**,** Earth System Science Data, NSF CAREER, HESS, Wetlands Ecology & Management, JGR- Earth's Surface