



LAURA LAUTZ

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Dr. Lautz is a hydrologist who aims to understand how hydrologic processes influence water quality and movement through watersheds. She is interested in how water moves through paired surface water and groundwater systems, and how nutrients and other solutes are processed and transported by streams. Her broad interest in exchange of water between surface and subsurface environments has led her to work on several interdisciplinary projects, within which she has used field experiments coupled with computer modeling experiments. Lautz has been awarded over \$4 million in funding as principal investigator on National Science Foundation projects. She has received awards for her teaching and research, including the Excellence in Graduate Education Faculty Recognition Award from SU and a CAREER award from the National Science Foundation.

heat tracing

hyporheic zone

stream-groundwater

interaction

stream restoration

water

Recent Research Projects:

Groundwater-Surface Water Interactions in Tropical Alpine Catchments and Their Influence on Sources and Stability of Water Supply during Glacial Recession. National Science Foundation. PI: Lautz, L.K. Co-PIs: Mark, B.G. and McKenzie, J.M.

Melting glaciers in the semi-arid tropics currently provide a large component of annual runoff buffering highly seasonal precipitation regimes. Glacier recession is predicted to make alpine runoff smaller in volume and more temporally variable stressing water resources. Groundwater aquifers in proglacial catchments are important storage reservoirs during dry seasons, and will likely play a dominant role in streamflow generation under future non-glacierized conditions. Little is known about fundamental hydrogeologic processes governing the interaction of surface water and groundwater in proglacial catchments. The research plan integrates a creative combination of field methods to directly quantify groundwater-surface water interactions in remote, data-poor glacierized catchments and describe the relative hydrologic influence of groundwater storage and melting glaciers.

EMPOWER: Education Model Program on Water-Energy Research. National Science Foundation. PI: Lautz, L.K. Co-PIs: Driscoll, C.T., Kahan, T.F., Scholz, C.A., Torrance, D., Johnson, C., Junium, C.K., Siegel, D.I. and Wilcoxon, P.

Water and energy are essential resources for human prosperity, but as populations and economies grow and climate changes, increasing global demands amplify their interdependency and vulnerability. EMPOWER is a comprehensive graduate research training program that aims to prepare students with the content knowledge and professional skills necessary to pursue academic and non-academic careers at the water-energy nexus. The research themes in the program span the complete hydrocarbon energy cycle: from deposition and origin of hydrocarbons; to hydrocarbon production from shale; to use and effects of hydrocarbons in energy, industry and transportation; and how these phases of the energy cycle interface with the hydrologic cycle, with particular emphasis on water quality.

Recent Scholarship:

Lautz, L.K., G.D. Hoke, Z. Lu, D.I. Siegel, *K. Christian, J. Kessler, N.G. Teale. **“Using discriminant analysis to determine sources of salinity in shallow groundwater prior to hydraulic fracturing.”** *Environmental Science & Technology*, vol. 48(16), pp. 9061–9069, 2014.

Gordon, R.P., L.K. Lautz, J.M. McKenzie, B.G. Mark, D. Chavez, M. Baraer. **“Sources and pathways of stream generation in tropical proglacial valleys of the Cordillera Blanca, Peru.”** *Journal of Hydrology*, vol 522, pp. 628-644, 2015. doi:10.1016/j.jhydrol.2015.01.013



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