

# KOHOUT EARLY CAREER AWARD

*Presented to*

**Audrey H. Sawyer**

Denver, Colorado, USA  
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Hydrogeology Division  
The Geological Society of America

## Audrey H. Sawyer



Audrey Sawyer is an assistant professor of earth science at The Ohio State University. Audrey's research focus is surface water–groundwater interaction in streams and coastal waters. She primarily seeks to understand how fluid flow near the earth's surface influences water quality and ecology. She and her research group pursue this problem through a combination of numerical and physical modeling and field observations. Recent studies have included nitrogen cycling in tidally influenced rivers, algal toxin fate in shallow lakebed sediments, and mapping submarine groundwater discharge at continental scales. She teaches courses in hydrogeology, contemporary water issues, and introductory geology.

Audrey received a B.S. in geology and environmental engineering from Rice University in 2004. During that time, she had the privilege of gaining hands-on research experience through a cruise in the Gulf of Mexico and summer internship in biostratigraphy at Lamont-Doherty Earth Observatory. Inspired to attend graduate school, she studied marine hydrogeology at the Pennsylvania State University and received a M.Sc. in geoscience in 2007 under the advising of Peter Flemings. She then moved to the University of Texas at Austin to study the hydrogeology of streams under Bayani Cardenas. She earned a Ph.D. in geological sciences in 2011. Eager to connect her research experiences in streams and deep seas, she next completed postdoctoral research in coastal hydrogeology under the mentorship of Holly Michael at the University of Delaware. Before arriving at The Ohio State University, she also worked as an assistant professor in earth science at University of Kentucky. Audrey is supported by a loving family including her husband Derek, two daughters Ellie and Joanna, and loyal dog Dagny.

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With great pleasure, I am citing Prof. Audrey Sawyer for the 2016 Kohout Early Career Award. Francis Kohout's seminal contributions were on groundwater flow in coastal and submarine aquifers. Decades later, Audrey would also impact this field with her recent paper where she calculated submarine groundwater discharge along the entire coastline of the United States and mapped areas vulnerable to contamination. This information is vital to the millions of coastal residents. This study may come as a shock to those familiar with Audrey's earlier contributions on aquatic groundwater-surface interactions. But seeing her expand the scope and depth of her research comes as no surprise to those who know her well. In a way, she has come full circle since she worked on marine sediment as part of her M.S. research at Penn State. Her postdoctoral work at the University of Delaware, which focused on tidal aquifers, has led to several important papers. Prior to this, her Ph.D. efforts were focused on the mechanics of hyporheic exchange due to large woody debris. Her dissertation seamlessly blended difficult time-consuming experiments, sophisticated computational modeling, and arduous field work. As a result, we have a deeper understanding of the flow and transport mechanics of this process, which is useful for practical problems such as river restoration. Her work on groundwater-surface water interactions has expanded to include important biogeochemical processes. She currently has a cadre of students addressing this topic and has secured competitive funding to support their efforts. Along with her group and her collaborators, she is now involved in hydrologic and water resources research from the Arctic to Africa. But more importantly, alongside her growing career and with the support of her husband Prof. Derek Sawyer (also a young professor at Ohio State), her young family has also flourished with two beautiful daughters, Ellie and Joanna. If they are as energetic as she is; their parents have their hands full. Audrey is a fitting recipient of the Kohout Award and a superb model for young scientists balancing their careers with their personal lives. This award is one of her many outstanding achievements.

—M. Bayani Cardenas, *Citationist*

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The Kohout Early Career Award is considered annually in accordance with the bylaws of the Division. It is awarded to a distinguished early-career scientist (35 years of age or younger throughout the year in which the award is to be presented or within 5 years of receiving their highest degree or diploma) for outstanding achievement in contributing to the hydrogeologic profession through original research and service, and for the demonstrated potential for continued excellence. The recipient need not be a member of the Hydrogeology Division, or of the Society.

The Kohout Early Career Award is funded by a generous bequest from the estate of Francis A. Kohout, a long-time USGS hydrologist. Francis Kohout was the 1961 recipient of the AGU's Robert E. Horton Award (now Hydrologic Sciences Award). Kohout conducted hydrogeologic and marine geologic research primarily along the continental margin of North America. He is probably best known for the so-called "Kohout convection", the geothermally driven circulation of sea water deep into carbonate platforms (as illustrated in the figure below).

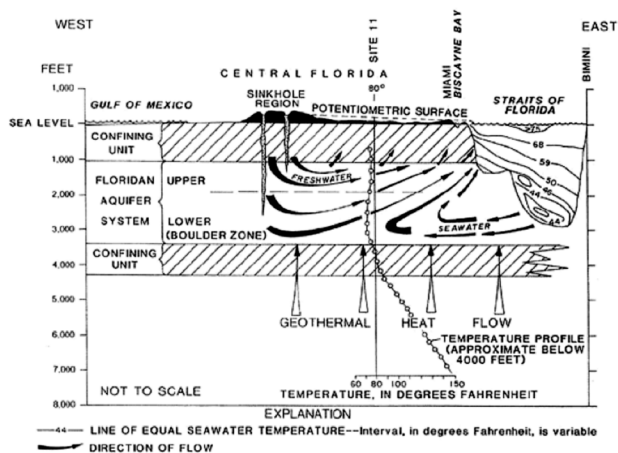


Figure from Kohout, F.A., 1965, A hypothesis concerning cyclic flow of salt water related to geothermal heating in the Floridan aquifer: New York Academy of Sciences Transactions, ser. 2, v. 28, no. 2, p. 249-271.