

KOHOUT EARLY CAREER AWARD

Presented to

Barret Kurylyk

Phoenix, Arizona, USA
24 September 2019



Hydrogeology Division
The Geological Society of America

Barret Kurylyk



Dr. Barret Kurylyk is an assistant professor at Dalhousie University in the Department of Civil and Resource Engineering and the Centre for Water Resources Studies. Barret's research focuses on the development and application of numerical and mathematical approaches to understand and elucidate hydrogeologic processes. He has already made significant research contributions in the fields of cold regions hydrogeology, heat as a tracer of groundwater processes, groundwater-dependent ecosystems, and climate warming impacts on groundwater systems. Based on a series of three highly cited articles on the impacts of permafrost thaw on groundwater systems, he has effectively defined the emerging research field of cryohydrogeology. Barret has also been a leader in developing easy-to-use numerical tools for groundwater researchers and practitioners to analyze thermal groundwater data. Barret and his rapidly growing research group now also study coastal and submarine hydrogeology with research sites in Northern and Maritime settings.

Barret received his Ph.D. from the University of New Brunswick in 2014 under the supervision of Kerry MacQuarrie. Before joining Dalhousie University, he was a researcher at the University of Calgary working with Masaki Hayashi and at McMaster University working with Sean Carey. Barret is supported by his colleagues, collaborators, and loving family (Judith, Lily, and Skye). In the past year, he was appointed as a Canada Research Chair in Coastal Water Resources.

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It is my great pleasure to be the citationist for this year's recipient of the Kohout Early Career Award, Dr. Barret Kurylyk. Barret grew up on Prince Edward Island in the Canadian Maritimes, a fitting location given Kohout's seminal research on coastal hydrogeology. As a civil engineering undergraduate student, Barret had the fortune to work with hydrogeologist Kerry MacQuarrie, leading to a Ph.D. at the University of New Brunswick. For his Ph.D. research, Barret coupled numerical modeling and field observations to understand how climate change will impact the thermal regimes of shallow aquifers and rivers with implications for cold-water fish habitat. He then undertook research positions with Masaki Hayashi at the University of Calgary and Sean Carey at McMaster University. Barret is now an assistant professor at Dalhousie University and holds a coveted Canada Research Council Chair on the topic of coastal water resources.

The hallmark of Barret's prolific research is his ability to develop and implement new and improved analytical solutions and numerical methods to address challenges in hydrogeology research and practice. For example, he has developed new analytical solutions and associated software tools for using heat as a tracer of groundwater processes. He has also been instrumental in developing numerical approaches for studying groundwater in cold regions, such as the impacts of thawing permafrost on groundwater resources in the north. At Dalhousie University, Barret's research is now also incorporating coastal processes.

While Barret is clearly a prolific researcher, what stands out is his focus on service. As a Ph.D. student he co-founded the Canadian branch of the Young Hydrological Society and has served in numerous capacities for an impressive number of Canadian and international research and professional societies focused on water resources. Further, his research group is also working with Canadian Indigenous communities on water security.

The Kohout Early Career Award recognizes both outstanding research and service, traits which Barret has clearly demonstrated. I cannot imagine a more deserving candidate than Barret Kurylyk for the 2019 Kohout Award.

—Jeffrey M. McKenzie, *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).

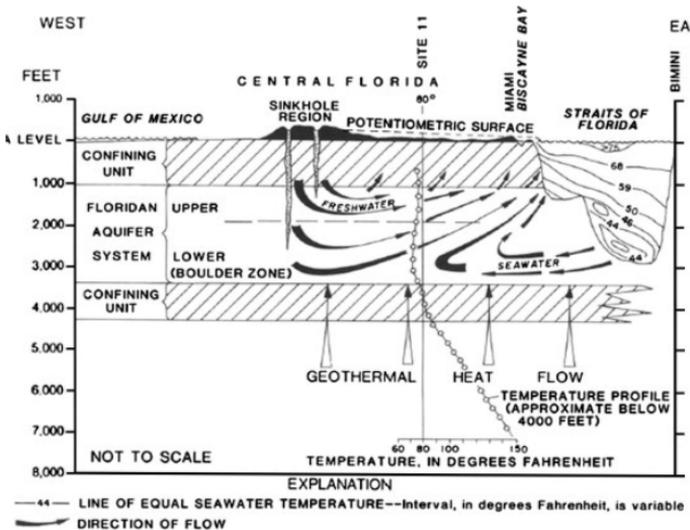


Figure from Kohout, F.A., 1965, A hypothesis concerning cyclic flow of salt water related to geothermal heating in the Floridan aquifer: New York Academy of Sciences Transactions, ser. 2, v. 28, no. 2, p. 249-271.