

Environmental Engineering Graduate Seminar

The Role of Numerical Models in Understanding and Managing Coastal Aquifers

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With 80% of the global population living near the sea, coastal aquifers serve as an important freshwater resource. Coastal aquifers, however, are under constant threat from many different factors, including overexploitation, saltwater intrusion, sea level rise, and human pollution. Numerical simulation of coastal groundwater flow is an important tool for understanding and managing coastal aquifers. But unlike freshwater aquifers, where groundwater density variations are minimal, the density contrast between fresh and saline groundwater can have a large effect on coastal groundwater flow patterns. Sophisticated tools have been developed to simulate density-dependent groundwater flow and the transport of salt in the subsurface. These tools are now commonly used to address coastal groundwater issues, as well as address inland water quality issues where saline groundwater may be present. This seminar will provide background on coastal groundwater issues, what is being done to manage these threats, and how numerical models are developed and used as an essential part of the analysis.

