

Uncertainty Quantification of Environmental Performance Metrics for Risk Analysis of Contaminated Groundwater

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Abstract

In this presentation, I provide a risk-driven perspective of the impact of hydrogeological heterogeneity in groundwater management with emphasis on the importance of uncertainty quantification in contaminated groundwater risk analysis. Many of the factors that constitute risk of exposure to contaminants in the subsurface environment are subject to uncertainty and requires knowledge from multiple fields ranging from hydrogeology to public health. Improved understanding of the impact from each of these factors in risk estimation can provide guidance for decision makers to better manage contaminated sites and allocate resources towards characterization efforts. Through the use of an integrated stochastic risk framework and several computational examples, I show the joint impact of hydrogeological properties and engineering factors on the uncertainty of key environmental performance metrics for health and environmental risk analysis.