A New Framework for Adaptive Sampling and Analysis During Long-Term Monitoring and Remedial Action Management

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The Argonne team has gathered available data on monitoring wells and measured hydraulic heads from the Argonne 317/319 site and sent it to UIUC. Xiaodong Li, a research assistant supported by the project, has reviewed the data and is beginning to fit spatiotemporal statistical models to it. Another research assistant, Yonas Demissie, has gotten the site?s Modflow model working and is developing a transport model that will be used to generate artificial data. Abhishek Singh, a third research assistant supported by the project, has performed a literature review on inverse modeling and is receiving training on the software that will be used in this project (D2K). He has also created two models of user preferences and successfully implemented them with an interactive genetic algorithm on test functions. Meghna Babbar, the fourth research assistant supported by the project, has created an interactive genetic algorithm code and initial user interface in D2K. Gayathri Gopalakrishnan, the last research assistant who is partially supported by the project, has collected and analyzed data from the phytoremediation systems at the 317/319 site. She has found good correlations between concentrations in the ground water and in branches of the trees, which indicates excellent promise for using the trees as cost-effective long-term monitoring of the contaminants.