

Quantitative Hazards Assessment: Informing Probability, Tracking Tephra, and Linking Models to Data Using GIS

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Geographical Information Systems (GIS) provide powerful tools for making the tasks of visualizing data, building conceptual models, and informing process models faster and more efficient. In this talk I will describe several projects underway in the Earth and Environmental Sciences Division at Los Alamos National Laboratory, focusing on 1) the integration and visualization of geologic and geophysical data for the probabilistic volcanic hazards assessment (PVHA) for the Yucca Mountain Project, 2) coupling models of atmospheric dispersal of tephra and its subsequent transport across the landscape (also for Yucca Mountain), and 3) linking a carbon dioxide sequestration risk assessment model to diverse data sources. All three of these projects lean heavily on GIS, and each demonstrates different aspects of its functionality. I'll attempt to strike a balance between the geologic stories and the underlying role of the data and how we use it in each of these examples.