

Workshop Announcement - Modeling of Water Flow and Solute Transport in the Vadose Zone

December 15-16, 2003, University of Hawaii at Manoa Campus, Honolulu, Hawaii

Instructors

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Overview

Numerical modeling is an increasingly important tool for analyzing complex problems of water flow and contaminant transport in the unsaturated zone. This workshop is designed to familiarize participants with the principles and numerical analysis of variably-saturated flow and transport, and the application of state-of-the-art numerical codes to site-specific subsurface flow and transport problems.

Workshop Description

The workshop begins with a detailed conceptual and mathematical description of water flow and solute transport in the vadose zone, followed by an overview of finite element techniques for solving the governing flow and transport equations. Special attention is given to the highly nonlinear nature of the governing flow equation. Alternative methods for describing and modeling the hydraulic functions of unsaturated porous media are also described.

Computer sessions will allow participants to become familiar with the Windows-based RETC, STANMOD, HYDRUS-1D and HYDRUS-2D software. Emphasis will be on the preparation of input data for a variety of applications, including flow and transport in a vadose zone, variably-saturated flow through a dam, and two-dimensional leachate migration from a landfill through the unsaturated zone into groundwater. Calibration will be discussed and demonstrated using both one and two-dimensional model inversions.

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