Simulation of Molybdenum Transport Through the Root Zone with a Functional Model. (S11-corwin160702-Poster)

Authors:

- D.L.Corwin* - *USDA-ARS, Riverside, CA*
- A.David - *BRGM - Laboratoire de Geochimie et Hydrogeologie*
- S.Goldberg - *USDA-ARS, Riverside, CA*

Abstract:

Due to ease of coupling to a GIS and to accepted organizational hierarchy of pedogenic modeling approaches, there is renewed interest in functional models to simulate transport of non-point source pollutants at polypedon and watershed scales. However, very little work has been done to evaluate the performance of a functional transient-state model. The functional model TETrans was evaluated for model performance with Mo transport data collected from a lysimeter column for 900 days. The focus of the evaluation was the performance of various functional models of Mo adsorption used in TETrans: (1) Freundlich, (2) kinetic Freundlich, (3) Langmuir, and (4) temperature-dependent Langmuir equations. Model performance was evaluated with statistical functions and graphic displays. No single adsorption equation when coupled to TETrans was considered poor in its performance. Results indicated the order of model performance was (1) temperature-dependent Langmuir, (2) Langmuir, (3) kinetic Freundlich, and (4) Freundlich. TETrans was able to simulate Mo transport with deviations attributed to the lack of a single functional adsorption equation that accounted for the influences of pH, ionic strength, temperature and kinetic effects.

Corresponding Author Information:

Dennis Corwin
USDA-ARS; George E. Brown, Jr. Salinity Laboratory
450 West Big Springs Road
Riverside, CA 92507-4617

phone: 909-369-4819
fax: 909-342-4962
e-mail: dcorwin@ussl.ars.usda.gov

Presentation Information:

Presentation Date: Monday, November 11, 2002
Presentation Time: 1:30-3:30 pm
Poster Board Number: 1614

Keywords:
Transient-state flow, Model performance evaluation, Trace element transport in the root zone