Integrated model to simulate and predict fate and transport process of contaminant in vadose zone

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Interaction between surface water and groundwater is always a hot research topic in geochemistry, ecohydrology and interdisciplinary sciences. It's better to reveal the law of contaminant behavior in the regional water cycle process coupling of surface water and groundwater simulation, and also provide a good basis for the comprehensive consideration in environment changes effected by nature and anthropogenic. Vadose zone is the bond linking of surface water and groundwater, therefore, the physical mechanism of integrated model will be greatly enhanced considering the dynamics of vadose zone water movement. In this research, the rural plain area in the Capital City of China, Beijing with water eco-system protection function has been selected as the study location which experiences period of drought and wetness annually. Based on the use of traditional field survey techniques combined with remote sensing technology to access to the model parameters, this research will discuss the comparison between two surface - groundwater integrated models (MIKESHE and IHM) to simulate and predict the fate and transport process of nitrogen loading in the study area.

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The molybdenum isotopic indication of low-medium temperature hydrothermal ore-forming systems: A case study on the Dajiangping pyrite deposit, Western of Guangdong Province, China

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We present molybdenum isotope data from 12 hydro-thermal syndepositional silicalite and carbonaceous slate samples from the Dajiangping pyrite deposit in western Guangdong Province, South China. The $\delta^{97/95}$Mo values from Orebody III range from -0.02‰ to 0.29‰, with an average of 0.18‰. In contrast, the composition values from Orebody IV display a larger variation from -0.70‰ to 0.62‰, especially the five samples from the main ore bed all show strong negative values. Orebody III is likely to have been deposited from submarine exhalative hydrothermal fluids under a relatively strong reducing environment and Orebody IV may have also been influenced by hydrothermal superimposition in a more oxidized disequilibrium condition. The $\delta^{97/95}$Mo values of Orebody IV are clearly negative, together with the values increasing stratigraphically upward in the ore beds, suggesting that the metallogenic environment of Orebody IV could be present dynamic fractionation in this restricted environment. Microorganisms including organic matter and replacement and/or adsorption of Fe-Mn oxides might influence the Mo isotopic fractionation in the ore-forming fluids.