



Statistical Performance Evaluation of Spatiotemporal Characteristics of Groundwater Flow and Contaminant Mass Transport

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As groundwater remains one of the most critical natural resources worldwide, numerical models of groundwater flow and contaminant mass transport provide a reliable tool for the efficient protection, planning and sustainable management of groundwater resources. This work focuses on the evaluation of the performance of different numerical models which have been developed to simulate spatiotemporal groundwater flow and contaminant mass transport in a coastal aquifer system. The evaluation of the models' performance has been based on 9 different statistical measures and indices of goodness of fit. Overall, the simulation of groundwater level and contaminant mass concentration delivered very good calibration and validation results in all cases, quite close to the desired values. Maps of aquifer water level and contaminant mass concentrations are provided for all cases in order the differences to be discussed and assessed. The selection of the appropriate model(s) is case oriented and it should be based on the problem's characteristics in order the spatiotemporal variability of the components under study to be optimally estimated.