

Groundwater Model Calibration by Meta-Heuristic Algorithms

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Abstract Groundwater models are computer models that simulate or predict aquifer conditions by using input data sets and hydraulic parameters. Commonly, hydraulic parameters are extracted by calibration, using observed and simulated aquifer conditions. The accuracy of calibration affects other modeling processes, especially the hydraulic head simulation. Meta-heuristic algorithms are good candidates to determine optimal/near-optimal parameters in groundwater models. In this paper, two meta-heuristic algorithms: (1) particle swarm optimization (PSO) and (2) pattern search (PS) are applied and compared in the Ghaen aquifer, by considering the sum of the squared deviation (*SSD*) between observed and simulated hydraulic heads and the sum of the absolute value of deviation (*SAD*) between observed and simulated hydraulic heads as the objective functions. Results show that obtained values of the objective function are enhanced significantly by using the PS

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