



Evaluation of multi-algorithm optimization approach in multi-objective rainfall-runoff calibration

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Calibration of rainfall-runoff models is one of the issues in which hydrologists have been interested over past decades. Because of the multi-objective nature of rainfall-runoff calibration, and due to advances in computational power, population-based optimization techniques are becoming increasingly popular to be applied for multi-objective calibration schemes. Over past recent years, such methods have shown to be powerful search methods for this purpose, especially when there are a large number of calibration parameters. However, application of these methods is always criticised based on the fact that it is not possible to develop a single algorithm which is always efficient for different problems. Therefore, more recent efforts have been focused towards development of simultaneous multiple optimization algorithms to overcome this drawback. This paper involves one of the most recent population-based multi-algorithm approaches, named AMALGAM, for application to multi-objective rainfall-runoff calibration in a distributed hydrological model, WetSpa. This algorithm merges the strengths of different optimization algorithms and it, thus, has proven to be more efficient than other methods. In order to evaluate this issue, comparison between results of this paper and those previously reported using a normal multi-objective evolutionary algorithm would be the next step of this study.