AUTOCAL - A generic tool for parameter estimation in hydrological modelling

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AUTOCAL is a generic tool for performing automatic calibration and sensitivity analysis that specifically links to the suite of hydrological and hydrodynamic modelling systems from DHI Water and Environment, including MIKE 11 and MIKE SHE. However, the software also allows an easy linking with other modelling software. AUTOCAL includes an efficient sensitivity analysis procedure for assessing the sensitivity of model results for any model parameter that can be used to identify the most important model parameters to be further refined in a succeeding parameter optimisation or calibration. For the calibration an effective and robust numerical optimisation routine, the Shuffled Complex Evolution (SCE) algorithm, is implemented. It uses a general multi-objective calibration framework in which different calibration objectives can be optimised simultaneously and allows tailoring the calibration for the specific model application being considered. AUTOCAL provides distributed computing facilities based on grid technology that enables sensitivity analysis and parameter estimation in computationally demanding models by effective utilisation of multi-processor PCs and PCs connected in a network.