Assessment of Input Uncertainty Using IPEAT

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Abstract. In the past three decades, sophisticated watershed simulation models are developed to conduct hydrological and nutrient processes to evaluate relevant environmental issues and challenges. In previous studies, it has been shown that the incorporation of input uncertainty by latent variables may enhance the performance of model predictions. In addition, the associated predictive uncertainty can be reduced. In this study, the Integrated Parameter Estimation and Uncertainty Analysis Tool (IPEAT) is incorporated with the Soil and Water Assessment Tool (SWAT) to explore the impact towards model predictions by altering default ranges of latent variables. The results suggested that the inclusion of input uncertainty by using latent variables may not guarantee the enhanced performance of model predictions nor the predictive uncertainty can be reduced. It may not be appropriate to use latent variables to incorporate input uncertainty during the auto-calibration process.