

# Application of data assimilation method on parameter estimation of flow and nutrient behavior in watershed model

\*Yosuke Horie<sup>1</sup>

1. Nippon Koei Co., Ltd.

In schemes for nutrient reduction from watershed such as Japanese total volume control framework on nutrient or master plan for sewerage system propagation, hydrologic and nutrient behavior in watershed is critical to make an effective plan to fulfill environmental standard of water body. However, there are many uncertainties in constructing a watershed model as follows. First, observation frequency of concentration of water quality, which is a target of such scheme on nutrient reduction, is not enough because they can be obtained in public water quality observation system only about once a month. Second, pollutant load unit, which is used for quantifying pollutant load from watershed, can be fluctuated from place to place. Third, there are many parameters of watershed models which should be calibrated. To resolve these problems, this study applied EnKF, one of data assimilation method, to SWAT (Soil and Water Assessment Tools) model, which can simulate hydrologic and nutrient cycle in watershed, and conducted parameter estimation to achieve more robust result from watershed model under the uncertainties above.

Keywords: Data assimilation, watershed model, water quality simulation, SWAT