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## **Effect of climate change on nutrient discharge in a coastal area, western Japan**

**YUTA SHIMIZU<sup>1</sup>, SHIN-ICHI ONODERA<sup>1</sup> & MITSUYO SAITO<sup>2</sup>**

<sup>1</sup> *Graduate school of Integrated Arts and Sciences, Hiroshima University, 1-7-1, Kagamiyama, Higashi-Hiroshima, Hiroshima 739-8521, Japan*  
[y-shimizu@hiroshima-u.ac.jp](mailto:y-shimizu@hiroshima-u.ac.jp)

<sup>2</sup> *Center for Marine Environmental studies (CMES), Ehime University, 2-5, Bunkyo-cho, Matsuyama, Ehime 790-8577, Japan*

**Abstract** This study investigates the effect of climate change on nitrogen and phosphorus discharges from a watershed in western Japan. Numerical simulations for a 30-year period (1978–2007) demonstrate a decrease in the annual precipitation as well as in the loads of nitrogen and phosphorus, over the study period. Nutrient fluxes were estimated using the Soil and Water Assessment Tool (SWAT) model. The estimated phosphorus flux is more highly correlated with precipitation than the nitrogen flux. The results suggest a high correlation between phosphorus and discharge, but during the high precipitation years, phosphorus loads have decreased. A sensitivity analysis of parameters for phosphorus discharge showed that the most sensitive parameter is the support practice factor. Consequently, phosphorus flux could decrease from the Asahi River watershed in the future, because precipitation and flood events have decreased and so has the driving force for soil erosion, which is the primary source of the nutrients.

**Key words** nutrient load; precipitation; SWAT model; western Japan