

## Developing and improving a simple runoff model of dissolved organic carbon considering soil infiltration and river runoff

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Estimation of dissolved organic carbon (DOC) runoff from forested watershed is important for carbon cycle researches and water quality control. Empirical regression models or process-based models have been proposed up to now, however, those are not yet ready for general use because of lack of internal processes as well as the complexity of parameterization. I proposed a simple DOC runoff model considering both soil processes, i.e. soil infiltration and seasonal changes, and river runoff processes assuming DOC source area. Two years' data for model development were collected from three different scale-stations in the Mizugaki research watershed. In soil sub model, dry-wet cycle in soil was successfully simulated by advection-diffusion and dissolution formulation and soil water movement was significantly responsible for overestimation especially for dry soil. In runoff sub model, the results from soil sub model being imported, DOC source area was assumed by hydrograph separation and wetland ratio. The model was highly applicable upstream, however, overestimated downstream due to error in quantifying riparian zone as DOC source area. In addition, hydrological model (TOPMODEL) was introduced for the further improvement.

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