

# Simulating methane emission in littoral zone of Miyun water reservoir using DNDC model

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**Abstract:** The littoral area is vegetated at the edge of reservoir that experiences cycles in permanently or seasonal inundated conditions based on water level of the reservoir, due to seasonal cycles or hydroelectric operation. We were intending to figure out which parts or if the whole littoral zone is available for fit simulation in the Wetland-DNDC model. To explore the application possibilities in littoral zone of the model and potentials for the reliable assessment of C dynamics after re-impound directed by South-to-North Transform Project (China) in 2014. We did comparison at three water level zones with dominant plants (hydrophytes, hygrophytes and mesophytes) between the observed from the chamber sites and simulated from model results of 2012 at site scale. The results showed that the model is capable of estimating CH<sub>4</sub> fluxes better than in the seasonal inundated, but some overestimated results in permanent inundated area at the littoral zone. The model is sensitive to water level change of flooding condition, but not strong to the effect on vegetation after flooding which lead to the variance of CH<sub>4</sub> emission. The model is also sensitive to vegetation species and biomass, but not strong to the environment effects on plant succession which lead to the variance of CH<sub>4</sub> emission. We concluded that the model is fit to CH<sub>4</sub> emission in the wet-dry belt at the littoral zone, but considerable improvements of CH<sub>4</sub> oxidation process in the deep open water and vegetation change.

**Keywords:** methane emission, littoral zone, dam water level, Wetland-DNDC model.