

## Predicting Inorganic nitrogen losses after forest harvesting with PnET-CN

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We applied an existent biogeochemical model (PnET-CN) in forested catchments to predicting inorganic nitrogen losses after harvesting in a Japanese cypress forest. Model parameters are decided from the various observations in Kiryu Experimental Watershed, Japan. Based on the long-term simulations with various patterns of forest harvesting operations, variations of DIN concentrations in streamwater and recovery of forest biomass are discussed. The impact of clear cutting is profound; it takes very long time to recover the forest biomass and DIN concentrations. In the non-commercial thinning operations, during which leave the timbers within the forest, these timbers are gradually decomposed and redundant nitrogen are runoff from the stream. As a result, although the recovery of biomass is faster in the non-commercial thinning operations than in the commercial thinning operations, the peak DIN concentrations are higher and the duration of high concentrations is longer in the non-commercial thinning operations. In the unmanaged forest, the DIN concentrations increase with the maturation. These results suggest that the non-commercial thinning operations may seriously affect on the streamwater chemistry, even these are effective to promote the growth of the residual forest.