

TEMPORAL VARIABILITY AND NUTRIENT BUDGETS IN THE BANGPAKONG ESTUARY, THAILAND

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Water, salt, inorganic dissolved nitrogen (DIN), and phosphorus (DIP) budgets in the Bangpakong estuary were conducted by repeated observations and multiple box modeling. Hydrochemical properties and water samples for inorganic nutrients analysis were monthly collected from June 2000 to May 2001. The water exchange time of the estuary depicts high variations ranging from 0.4 (October 2000) to 97 days (February 2001) with an annual mean of 16.5 days. Riverine nutrient inputs and distributions of nutrient concentrations within the estuary varied in space and time. High concentrations of nutrients appeared in the middle estuary during the dry season due to high nutrient loads and longer water exchange time. Temporal variations in residual and mixing fluxes were strong within interseasonal scales owing to water fluxes and system concentrations. The export fluxes of DIN and DIP from the estuary to the Gulf of Thailand were higher than those of riverine fluxes. The increases of DIN and DIP flux in the estuary may be results of degradation of particulate organic matters. The estuary appears to have stronger a net heterotrophic system, where respiration exceeds photosynthesis ($p-r < 0$), and a denitrifying system during the dry season than those of the wet season.