

# Assessing Sediment and Nutrient Transport in the Pra Basin of Ghana

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## Abstract

Regression analysis was used to establish relationships between suspended sediment yield and nutrient export coefficient as the dependent variable, and runoff and catchment area as the independent variables. The established regression equation can be used to estimate suspended sediment or nutrient yield at any cross-section within the drainage basin with no sediment or nutrient data, if the mean annual runoff and catchment area are known. The equation can also be used to estimate the total suspended sediment and nutrient transport into the sea. The Pra basin of Ghana, which is made up of the Birim, Offin and Pra sub-basins, had PO<sub>4</sub>-P loads from mainly domestic, agricultural and commercial activities. The nutrient loads of Pra basin showed a general trend of increasing downstream. The high load of 14.6 t day<sup>-1</sup> at Twifo-Praso is mainly due to palm oil production. Those of Dunkwa (1.98 t day<sup>-1</sup>) and Beposo (2.74 t day<sup>-1</sup>) were mainly due to domestic and commercial activities. The suspended sediment and nutrient transport into the sea are estimated by the model to be about 1.2 × 10<sup>6</sup> tonnes for suspended sediment, 792 tonnes for nitrates nitrogen, 3 kilo tonnes for ortho-phosphorous phosphate, 141 kilo tonnes for sulphate and 188 kilo tonnes for silicate.